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## ORIGINAL ARTICLES.

### A FEW NOTES ON SYPHILITIC BUBO.

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THE lymphatic glands, which are placed on the route of the lymphatic vessels, form a kind of chain representing a defense of Nature against pathogenic agents. When micro-organisms attempt to enter through the skin or the mucous membranes, they are taken up by the lymphatic vessels and directly carried to the lymphatic glands, where they are disposed of either temporarily or finally.

These glands, although considered to be of a complex structure, are simple in their constitution. A capsular membrane of connective tissue forms the basal texture, much tighter and more closed than the ordinary connective tissue, and according to Koelliker it contains some fine elastic elements. The capsule is traversed by lymphatic and blood-vessels, some entering and some going out of the gland, vasa inferentia and efferentia. The lymphatic vessels entering from different points into the gland open into a system of lacunæ, from which in the form of canals, other vessels have their origin, which leave the organ through the hilum. This cavitary system, which represents the lymphatic current of His, is surrounded by arteries and veins. They are not a simple anastomosis of convoluted and looped vessels, but consist of an aggregation of anastomosing cells into which the vasa afferentia open and from which the vasa efferentia proceed. In the lymphatic glands there is a special glandular element, and not simple plexuses of lymphatic vessels. In fact, from the walls of the blood-vessels start a quantity of small fasciculi of connective-tissue fibers, which, subdividing themselves, are anastomosed with those nearest, forming a kind of network with thin trabeculæ spread in every direction.

In the normal condition of the glands the connective-tissue fibers do not show nuclei in their interior, but are covered with endothelial cells, like those which are found in the grand epiploon. These fibers, so protected with endothelial cells, form the interior of the cavities of the gland. These cavities are constantly filled up with lymph extremely rich in white-blood corpuscles. They are neatly limited by connective-tissue bundles containing blood-vessels which separate and limit the lymph spaces, forming a kind of spongy tissue resembling that of the spleen. Cornil and Ranvier[1] injected a mixture of carmine in water into the subcutaneous tissues surrounding the sciatic nerve of the leg of a rabbit. After forty-eight hours the animal was killed and the lymphatic vessels were found to contain red granules, and so the lumbar lymphatic glands were colored with carmine in their cavities, leaving the limiting funicular bundles entirely white. The coloring granules were contained in the lymphatic cells and also in the endothelial cells which plaster the surface of the trabeculæ. Koelliker also found it impossible to fill lymphatic vessels in the interior of the lymphatic glands by means of injection. The injection fluid colored only the ramifications of the vasa afferentia upon the gland, or when it was pushed further it entered the alveoli according to their position. In this way it showed that there exists no direct connection between the afferent and the efferent lymphatics, leaving the alveoli as a special modifying part of the gland. As a consequence the lymph is poured into the alveoli, flows through them in finely-divided streams among their elements, where their contents are composed and elaborated. The alveoli of the lymphatic glands have as their function the task of inducing a metamorphosis and changes in the lymphatic fluid, flowing through them under the influence of the cells in their pulp, which are in a continual process of development. This is also proved by the fact that the lymph is richer in corpuscular elements after its passage through the glands.

The afferent lymphatic vessels enter into the cavity of the gland by different points and the efferent vessels go out through the hilum of the gland together with arteries and veins. The lymphatic vessels retain all their tunics up to the gland, but on entering the gland they lose the muscular membrane and enter the alveoli as a loose structure resulting only from connective tissue and from elastic fibers covered with epithelium. In frogs the lymphatic glands are not found, but in their place the lymphatic vessels form sacs in their course, covered with an abundant epithelium. In mammals, however, the circulation of the lymph in the glands is much more complex.

The chief function of the lymphatic glands is the formation of lymph corpuscles. In fact, the afferent lymphatic vessels have a lymph much poorer in corpusculated elements than the efferent vessels. The importance of the lymphatic glands in the process of blood-formation was confirmed when Virchow gave to the world his immortal treatise on leucemia, and showed that in many cases the increase of the colorless elements of the blood was only a coincidence of an hypertrophy of the lymphatic glands.

The following important function was recognized by Brücke, Donders and Koelliker: Elements of the lymphatic glands go into the lymph, which may be formed by the cortical substance or by the medulla of the gland. In the alveoli sur-

rounded by the cortex with their peculiar anatomical arrangements, the entering lymph is placed in intimate contact with abundant blood-vessels. The blood is subjected to a much greater pressure than the lymph, and in consequence many constituents of the blood will pass into the lymphatic lacunæ and mingle with the lymph. The lymph in the lacunæ moves slowly and consequently has every opportunity for the formation of cells.

Indeed, according to Koelliker, the exudation from the blood-vessels plays a much more important part than the slow movement of the liquid itself. The lymph from the vessels which has not gone through the glands is poor in corpuscles, and so the lymph of those vertebrate animals which possess only a few isolated lymphatic glands or none at all is very poor in cells. This shows that the lymph by itself is incapable of organization, and the formation of colorless cells in the lymphatic glands is chiefly dependent upon the transuding constituents of the blood. As a consequence the lymphatic glands are not merely plexuses of lymphatic vessels, but are organs in which the lymph is elaborated.

Furthermore, the fine trabeculæ of the lymphatic glands form the most delicate and complex kind of a filter, which prevents the passage of obnoxious germs from the afferent vessels to the efferent vasal system. It is quite natural that when pathogenic organisms have found their way into the lymphatic vessels they are carried by the lymph to the lymphatic glands. In them three final results take place. If the microbes be not virulent, the leucocytes rush up and soon destroy them without further disturbance; if the microbes be capable of a pathogenic action, then a struggle takes place, liquids are exuded, leucocytes come out of the blood-vessels, a local inflammatory process results, blocking the progress of the lymph in order to limit and circumscribe the infection. When the microbes are very virulent, the organism is unable to cope with them, the lymphocytes which try to approach the virulent germs are repelled by the secretion furnished with the power of negative chemiotaxis, and so they are allowed to pass and cause general infection.

In fact, in the course of different infections, acute, subacute or chronic inflammations and suppurations, in cases of anthrax, tuberculosis, carcinoma and syphilis, the lymphatic ganglia are swollen in the region corresponding to the first place infected. Observations show that changes take place in them somewhat analogous to those occurring at the point of infection by an enormous multiplication of cells, which causes the swelling and the induration of the ganglia.

Although the studies investigating the nature of the syphilitic virus have been so assiduously carried on in late years as to give us a large literature on the subject, and though we are convinced of the bacillary nature of this virus, the bacillus has not yet been definitely demonstrated. From Donné, 1837, to Lastorfer, 1872, and from Lastorfer to Lustgarten, 1884, Taguchi, 1885, Fordyce, 1893, and Jullien, 1901, there has been published a continuous series of articles claiming the discovery of the syphilis bacillus, but science has not yet spoken the last word and the question still *sub judice pendet*. When the bacillus syphilis with its biological changes shall be clear, we will be able to understand this protean disease of which a great many points still remain obscure.

The syphilitic virus when inoculated in an abrasion of the epithelium of the mucosa or of the skin finds its abode in the place where it has found its entrance. There the bacillus is developed and multiplied, it proliferates, as in a culture, and when ripe forms the hard chancre. At the same time either the bacilli or their toxins go through the lymphatic vessels, reaching the lymphatic glands, which swell up and become hardened, showing a mild insufficient reaction, which in ordinary cases does not reach the degree of a true inflammatory process.

This condition of swelling and hardening of the lymphatic glands in the vicinity of the developed chancre is called syphilitic bubo. It has nothing to do with the gummatous infiltration which is a production of a late syphilis. The induration of the lymphatic glands from a developing syphilitic infection does not remain limited to the inguinal glands, or to the glands near the place of infection, but affects the whole system of these glands in the secondary period. As the syphilitic infection is frequently found on the genitals, so the enlargement of the glands is found in the inguinal region and is therefore called syphilitic bubo.

This glandular enlargement is sluggish and is unaccompanied by pain, heat, redness or edematous condition of the surrounding skin. Several glands are involved, so that we can feel with the fingers the row of inguinal glands lying along the line of Poupart's ligament, and sometimes the supracrural are also involved. Each gland can be separately felt as a hard, round, sharply-defined nodule, sometimes movable under the skin. In the beginning of the infection the adenopathy is most prominent on the side corresponding to the initial lesion, but it is soon found equally spread on the other side. Syphilis does not produce pus and as a consequence the glands do not undergo suppuration, one of the characteristics of the syphilitic bubo. In some cases, however, there is suppuration, but this is only incidental from mixed infection. In this case there is an absorption of the pus-generating germs by the chancre and we have a simple suppurating bubo, or there is present a mixed infection resulting from a chancroid and a hard chancre, and in this case we have the virulent bubo. But these are only incidental and are out of our subject.

The lymphatic glands are affected by the syphilitic virus constantly, and their engorgement is not due to the presence of the secondary eruption or to the abraded patches, as they are enlarged without these manifestations. In fact, the glands

are enlarged before any eruption has yet appeared. Zeissler[2] referred to two cases of unmistakable syphilis without any cutaneous manifestations sufficiently clear on account of the chancre, the generalized lymphatic adenopathy and the alopecia. In hereditary syphilis we find the engorgement and hardness of the lymphatic glands in newborn children, although no eruptions of any kind are present. The inguinal glands constituting the syphilitic bubo attain in ordinary cases the size of a hazelnut, sometimes becoming even larger. They are easily felt in individuals with scanty panniculus adiposus, but in those in whom it is abundant the glands are not easily felt. Although they are painless, a disagreeable sensation is often produced by pressure. They remain in this condition during the whole secondary stage of the disease, and then gradually terminate in resolution, leaving, however some hardening of the glands which remains for many years.

Many are of the opinion that the lymphatic glands retain the syphilitic virus, where it remains latent and from them is at times distributed into the general system, causing relapses. It is a very plausible theory, but so far we have no testimony whatever to support these views. The lymphatic adenopathy has been made responsible by Stoukovenkoff[3] for the leucocytosis which has been found in the blood of syphilitic patients.

*Pathology.*—The process affecting the glands is an irritative one and in consequence hyperemia and swelling are the necessary results. The swelling occurs from an increased flow of serum from the blood-vessels, causing an enlargement of the follicles of the glands. Virchow has given a classical description of these glands in the following terms: Some of the inguinal glands are of the size of a plum, whitish externally; others are of a bright reddish color, presenting in sections numerous caseous foci, of the size of a cherry-pit or smaller; some of the latter are white and dry; others are of pasty consistence. In my experience with syphilitic glands I have found the parenchyma of the glands always well preserved, of a reddish-white color, without caseous foci or cirrhotic points. The capsule of the glands is somewhat thickened, as is also the connective tissue forming the trabeculæ.

Under the microscope (Oc. No. 3/3) specimens usually show the capsule forming the envelopment of the gland enlarged and thickened. The connective-tissue fibers, which make the stroma of it, are enlarged and show large connective tissue corpuscles containing large nuclei. In the same way the elastic fibers which are mingled with the connective tissues are greatly enlarged. Between the fibers there is some infiltration, a quantity of small mononuclear leucocytes are scattered between the connective tissue's elements, showing a true exudation. These small lymphocytes are more abundant around the blood-vessels, which show the infiltration in and about their tunics. The blood-vessels are decidedly enlarged and so are the cells of the endothelium, already giving that peculiar appearance of an early endarteritis. The abundant blood-vessels in the sepiments of the gland show it to be also enlarged, the elements comprising the tunics enlarged and surrounded by a large quantity of infiltration cells. The lymphatic vessels are not exempt from this condition in which the other vessels are found; their walls, although thin, are surrounded by abundant infiltrating cells and their endothelial cells are enlarged and loose. The pathological alterations of most importance are found in the follicle of the gland, which is enlarged and hypertrophic. The connective tissue forming its stroma is thickly infiltrated with small cells. To this process the connective-tissue fibers are not entirely strange, as they are enlarged and proliferating and their connective tissue-corpuscles are greatly enlarged and contain many nuclei. The alveolar structure is enlarged and the lymphatic spaces are filled with an immense quantity of mononuclear leucocytes. The lymphocytes are well preserved and with the exception of the connective-tissue corpuscles of the sepiments there are no giant cells, nor mast cells, showing a tendency to degeneration. They are the ordinary lymphocytes which are found normally in the lymphatic glands, where very probably they are formed.

These pathological alterations are entirely in contrast with those found in the suppurating adenitis of chancroidal origin. In the inflamed glands the infiltration is found only in the cavitary system of the gland, and it is composed of multinuclear leucocytes. In many points they are degenerated in foci and are replaced by pus-cells.

The lesions of the blood-vessels which enter in the follicle of the lymphatic glands are identical with those which we find in the initial sclerosis, in which we find the walls of the blood-vessels thickened and infiltrated. The infiltration which is found around the connective tissues forming the follicle of the gland is identical with that which is found among the fibers forming the stroma of the skin.

Furthermore, this process is different from that which we find in syphilitic gumma. In the gumma the infiltration is homogeneous with the giant cells in the middle and mast cells; in several places there are cells in complete degeneration.

From the pathological alterations we can see that syphilitic bubo is not a genuine inflammatory process of the inguinal gland, but is produced by the same infiltrating process which is the characteristic of syphilis. It is a process especially affecting the vascular system, with an enlargement and thickening of their tunics. The lymphatic vessels are also implicated in the same process, and the delicate structure of their tunics and the enlargement of the lymphatic spaces show prominently the alterations. The hypertrophic condition of the follicle of the lymphatic glands and the large quantity of lymphocytes in the cavitary system of the gland may be an ex-

planation of the condition of the blood in the syphilitic patients.

We find that syphilis produces a decided effect on the blood in the form of leucocytosis.[4] Stoukovenkoff, Biegaski and d'Amore established the fact that under the influence of the poison of syphilis there is a rapid decrease in the proportion of hemoglobin as well as in the number of red blood-corpuscles, and parallel with this an increase in the white blood-elements, especially of the lymphocytes.

Ernest Becker[5] made the object of his study the morphological conditions of the blood in syphilis in order to determine the quantity of erythrocytes and leucocytes. In two cases with roseola and general adenopathy he found a marked leucocytosis with predominance of the lymphocytes. The relation of the polynuclear to the lymphocytes was 65:30, representing in a cubic millimeter 3,000 lymphocytes instead of the normal 1,200 to 1,500. These observations confirm the theory of Virchow, *i. e.*, that in syphilis the general swelling of the glands goes together with the lymphocytosis. In a patient affected with initial sclerosis without constitutional symptoms, the blood was found in a normal condition.

From these observations and from the results of my researches in the histopathology of the syphilitic bubo, I would arrive at the conclusion that the alterations of the lymphatic glands are the cause of the leucocytosis in syphilis. The hypertrophy of the connective tissues forming the follicle of the gland together with the hypertrophic condition of the blood-vessels induced by the syphilitic virus prevents greater elaboration of the white elements of the blood, which in a large quantity remain accumulated in the alveoli as mononuclear lymphocytes. The swelling of the lymphatic gland is not from a genuine inflammatory process, but from a hyperplastic process representing that which we find in the tissues affected with initial sclerosis. The accumulation of the lymphocytes in the cavitary system of the gland is not the result of an active exudation, but rather of a passive exudation on account of the difficulty which the lymphatic elements find in going through the affected glandular tissue.

From my observations I am of the opinion that syphilis affects the lymphatic system and the blood-vessels, since we find the most perceptible alterations about the blood- and lymph-vessels. In this regard, however, we must see that the lymphatics, being of so delicate a structure, cannot show the same alterations as do the blood-vessels, and therefore they are the channels best adapted to carry the syphilitic germs.

In the foregoing considerations we have seen that the lymphatic glands are to be considered as organs of protection, to stop the progress of invading infectious elements. Augagneur[6] has advanced the theory that the lymphatic glands, when active in their functions, with their phagocytic power must modify the infectious elements, and in consequence an intense adenopathy would be a favorable symptom in syphilis, showing the defensive power of the organism. Landouzy and Labbé[7] maintained that the lymphatic glands have to be considered as organs capable of hindering the progress of those bacteria which have escaped the bactericidal action of the leucocytes and of the endothelial cells, as a second center for the phagocytosis. According to those authors, the volume of the glands would be the result of the resistance of the organism rather than of the result of the gravity of the disease. For Labbé and Landouzy the absence of the enlarged glands in syphilis would mean a bad prognosis, showing insufficience of the protecting action of the lymphatic organs.

Tommaso De Amicis,[8] in his invaluable article "Sul preteso potere difensivo fagocitico del ganglii linfatici contro il virus sifilitico e valore semiologico che spetta alle diverse adenopatie nella sifilide," stated that the opinion of the two authors referred to is entirely against clinical observations. The fact shows that great enlargement of the lymphatic glands usually accompanies cases of grave syphilis. Mild cases of syphilis show very mild adenopathy, so that sometimes we remain in doubt in the diagnosis if other symptoms do not show the presence of syphilis.

In this case, as De Amicis says, we find that the phagocytic power of the lymphatic glands is no longer of any value against the syphilitic infection. Manfredi maintains that the parenchyma of the lymphatic glands offers a favorable dwelling place for virulent pathogenic bacteria, which may remain there for some time in a latent condition without losing any of their vitality.

Indeed, the white elements contained in the lymphatic glands are only lymphocytes, young lymphatic elements not yet formed, and, as Metschnikoff himself considers them, are deprived of phagocytic power. In consequence we can see that the lymph contained in the lymphatic glands, in the case of a negative chemiotaxis, offers rather a favorable culture medium for the life of virulent micro-organisms. In this way we come to explain how in these glands a latent microbism may occur and the syphilitic germs may remain there in a latent state, and at different intervals, in consequence of a weakened condition of the organism, they make their appearance again in different tissues and organs as syphilitic relapses. Virchow has already stated that the syphilitic infection is not a permanent dyscrasia in the blood, but that its chronicity is due to the persistence in the system of the morbid elements, which at times again find their way into the general circulation. He has also clearly stated that the lymphatic organs are the hiding-places of the infectious morbid elements.

In consequence, the lymphatic glands, which in certain infections are the true defenses of the organism from the invading bacteria, in other infections of a more virulent nature, are made incapable of reaction and they may contain

in their structure the virulent bacteria. In this way we can explain how the lymphatic glands are made the store-rooms for the syphilitic virus. From pathological specimens I have shown that the adenopathy of the syphilitic inguinal glands is not of a reactive nature, but it is rather of a proliferating type. It is a repetition of the same infiltrating process which we have found in the initial sclerosis, which is especially perceptible in the tunics and around the blood-vessels. We cannot deny that the lymphatic glands are probably endeavoring to attenuate the virulence of the syphilitic germs, but they are made powerless to cope with a virulent element, and for this reason they undergo the same infiltrating and proliferating process as do the other organs without any characteristic reaction against the invading morbid elements.

*Differential Diagnosis.*—In cases of great enlargement of the lymphatic glands, we must not forget the possibility of other irritating causes, together with the presence of special individual conditions. In the group of glands enlarged by syphilis we always find one gland which is larger than the others, which corresponds to the anatomical gland of Ricord. Syphilitic bubo is indolent, but sometimes it may become active and inflammatory symptoms may develop if the initial sclerosis be contaminated with septic or with other pyogenic infection. In this case the pathological alterations are different from those which we have found in the true syphilitic bubo. In the inflammatory adenitis we find the pathological alterations more extended to the cavitary system of the gland, where the convolutions of the lymphatic canals have become perceptible, and the contents of the alveoli consist of polynuclear leucocytes, with foci full of detritus and pus cells. In regard to the general syphilitic adenopathy, we must point out that quite often in cases of excoriations of the lips, of eczema of the scalp, and of impetigo, we may find enlarged glands of the cervical region, which may sometimes give rise to the suspicion of an hereditary syphilis.

The syphilitic general adenopathy is independent of the eruptions of the skin and of the mucous membranes and appears long before any such manifestations have appeared, as already proved by the majority of the syphilologists. But we must also consider that the cutaneous eruptions, especially when excoriated, and the excoriated or ulcerated patches of the mucous membranes must have some influence in the adenopathy by furnishing infectious material to the lymphatics and through them to the glands. In these cases the intensity of the adenopathy is not entirely due to syphilis, but is due much more to a secondary bacterial infection. In fact, Fournier and Campana claim that the presence of mucous patches of the pharynx, abraded and ulcerated, covered with septic materials, is the cause of excessive swelling of the cervical lymphatic glands. Campana[9] has observed that in syphilitic individuals any common disease of the skin, such as scabies, eczema, etc., is liable to increase the swelling of the lymphatic glands of the groins, while in non-syphilitic cases it will not have any bad influence on these glands.

I must mention that the lymphatic glands are also affected with the syphilitic gummous process, *gummous lymphadenitis*, as proved by Virchow and confirmed by Verneuil, Lancereaux, Cornil, Jullien, Campana, Lustgarten, etc., which is different from syphilitic bubo.

In my service at the City Hospital I quite frequently came across enormous syphilitic buboes in individuals who have recently been affected with syphilis. I have selected a series of cases of recent infection with swollen glands of the groins, before any symptom of constitutional syphilis had appeared. In one case the initial sclerosis had already healed, but in two other cases it was removed at the time of removing the infiltrated glands. The wound healed promptly, and as a result of the removal of the glands the penis and the scrotum were affected with considerable edema on account of the disturbed course of the lymph. This edema after several weeks gradually disappeared. The patients, during the time they were in the hospital waiting for the healing of the surgical wound, did not show syphilitic constitutional symptoms and so were discharged. Two of them came back after six or eight weeks, one with a roseolar eruption, and the other with a maculopapular syphilide, which easily yielded to murcurial treatment. The delay in the appearance of the constitutional symptoms, if not their diminished intensity, must have been due to the removal of the hypertrophied glands. In this regard I agree with R. Matzenauer,[10] who stated that the possibility of avoiding general syphilitic infection by means of the total extirpation of the infected glands has not absolutely vanished.

The lymphatic glands after a period of from two to three years or more return to their normal size, but in a great many instances, when the general adenopathy has been very marked, they can be felt as small hard knots under the exploring fingers. The inguinal glands in particular, when they have been greatly enlarged, remain perceptible under the fingers as small hard granules during life. This is due to a sclerotic process, which takes place in the hypertrophied glands at the expense of the connective tissues forming the parenchyma of the gland.

One word more in reference to the treatment. Syphilitic bubo is indolent, without inflammatory reaction; in consequence there is no necessity for antiphlogistic treatment. As it is due to the syphilitic process, local mercurial applications are of great benefit. These can be made by rubbing on the groins the ordinary unguentum cinereum or by applying a piece of cloth on which emplastrum hydrargyri has been spread over the hypertrophied glands. In case of obstinacy of the syphilitic bubo, in order to obtain quicker results, we can inject a few drops of olei cinerei (gray

oil) into the subcutaneous tissue around the glands, as already practised by Lang.

In conclusion we can say that syphilitic bubo will gradually disappear without surgical interference.

*Note.*—After my article had been read before the Research Society of Cincinnati, I have received a magnificent article from Dr. Louis Jullien,[11] to which I must refer, as it confirms my views. He, too, is opposed to the doctrine of Augagneur of Lyons, which, although partially supported by the observations of Haan and Cao and by his own, is nevertheless refuted by ordinary clinical observation and by laboratory experiments.

According to the last-named authors the conclusion was to preserve the lymphatic glands, because to remove one gland means the depriving of the system of one of its natural defenses, and when the system of the lymphatic glands has been previously attacked, as in scrofulous, tuberculous and leucemic subjects, treatment must be carried out in all its curative power as the system is deprived of its natural defense. But this concerns only the first infection in its progressive development, and does not regard in any way the following period of evolution of syphilis.

Jullien reiterates his views in regard to a few points: The inflammatory process in the glands is followed by inertness and impotency; the resources of the organ are exhausted, the rushing of the polynuclear either impeded or insufficient; there the infecting bacillus finds its place and there it dwells. He cites the cancerous process as an example of the lymphatic glands, after some reaction, becoming the abode of the cancerous process.

He finds that a great many micro-organisms, which in the general circulation would find their destruction, are maintained and proliferate in the ganglionic system where they find a culture medium propitious to their development. If the lymphatic glands offer the germs a good ground for development, they will offer also a good hiding-place for their preservation during the period of latency.

Jullien refers to the two surgeons who wounded themselves while performing an operation on a syphilitic patient. Both developed syphilis in form of a mild roseola, without the appearance of a chancre, which appeared after the thirtieth day. The infection in both cases was directly carried into the general circulation, without passing through the lymphatic channels. As a consequence the period of incubation was reduced to thirty days instead of sixty-seven. The disease was very mild in its symptoms, showing that in the general circulation the syphilitic germs can be disposed of more easily than when passing into the lymphatic system.

Another argument is taken by Jullien from the mildness of the symptoms in the evolution of syphilis in old people, in whom the shrunken atrophic lymphatic glands have no longer any activity and offer no longer a propitious culture medium to the developing germs.

In my practice since writing the first article I have had occasion to remove enlarged syphilitic glands of the groin (syphilitic bubo) in several cases with satisfactory results in regard to the successful evolution of the constitutional symptoms of syphilis.

In one case, especially, in which the right inguinal glands were affected, I removed all the affected glands, one being the size of a plum. The patient came to my office on February 6th with a well-developed initial lesion of three weeks' duration, accompanied by adenopathy of both groins, one gland of the right side being greatly swollen and hard, but without pain or inflammatory symptoms. No result followed local applications of mercurial plaster, etc., so I removed the glands. In three weeks the wound had completely healed. On March 16th a few spots of roseola could be seen on the back and gluteal region; there were none on the front of the body. A mild pharyngeal erythema was the only other symptom. The roseola and pharyngeal erythema disappeared in twelve days under the use of gray oil injections. The patient is continuing in treatment, feels perfectly well, and with the exception of a mild enlargement of the cervical lymphatic glands, no syphilitic symptoms can be found.

Thus is confirmed the assertion of Virchow that the syphilitic germs are not preserved in the blood, but in the depth of the lymphatic system.

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## TOBACCO HEART: WHAT IS IT AND WHAT ITS TREATMENT?

BY FRANK D. MAINE, M.D.,
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IT seems befitting to seek the columns of your journal to answer the oft-repeated inquiry, "What is a tobacco-heart?" Before answering directly the interesting question, however, it were well to state a few facts relative both to the heart and to tobacco.

*First*, the heart, though not a unit in structure, is in composition largely of muscular tissue.

*Second*, its situation is within the left chest and the weight in an average-sized man is about nine ounces; in a woman of like physique, about eight

ounces. Moreover, it is divided into four cavities; the two upper are known as auricles, the two lower as ventricles. By the alternate contraction and dilatation of these receptacles the blood, having been oxygenated in the lungs, is sent to all parts of the organism. Now the perfection by which this physiological function is accomplished depends upon the normal, vigorous condition of this "fountain of life."

Concerning tobacco it is authoritatively stated that, besides a variety of ingredients entering into its composition, "the chemical examination of a tobacco leaf shows its surface dotted with minute glands, which contain an oil, found in no other plant, the proportion of which being seven per cent. of the weight of the leaf." This oil is known as nicotine; and it is this alkaloid, the active principle of the plant, one of the subtlest of poisons, that, united with ammonia, ever more or less present, imparts the pungent odor and determines the strength of tobacco.

We are now prepared to speak of the toxic or poisonous effect of tobacco, its therapeutic action not to be considered in this connection. Nicotine, in a word, primarily lowers the circulation, quickens the respiration, and excites the muscular system; but its *ultimate* effect is general exhaustion. As administered even in the most minute doses, the results are alarming, and in a larger quantity will occasion a man's death in from two to five minutes.

"The effect on the heart," in the ordinary uses of tobacco-smoking and chewing, "is not caused by direct action, but rather by paralyzing the minute vessels which form the batteries, so to speak, of the nervous system. The heart, freed from their control, increases the rapidity of its strokes, with an apparent accession, but *real* waste of force."

The longest nerve emerging from the base of the brain, the pneumogastric, supplies with its numerous branches the motive power for the functional activity of lungs, heart and digestive apparatus, respectively. Tobacco acts injuriously upon this nerve throughout its extensive distribution, producing relaxation and paralysis more or less complete, in proportion to the degree and extent of its use, of the involuntary muscles, as applied to the vital organs just mentioned. Proof of this indirect invasion I have repeatedly observed in the congestive cough and dyspeptic symptoms, more or less manifest, seen in connection with a well-pronounced "tobacco heart." The characteristic signs of the latter are more than the rapidity of its strokes, nervous palpitation, and waste of vital force, to which I have referred, irritability being always present, and one of the most conspicuous effects is irregularity of the heart's normal, rhythmic pulsations. By the prolonged use of tobacco, hypertrophy or thickening of the left ventricle, or even of the entire heart, may obtain by the disturbed innervation and overaction of this organ.

The treatment is for the most part negative—total abstinence. Even disappearance of the hypertrophy, says Osler, may take place upon the discontinuance of the use of tobacco. This, together with a proper observance of the laws of hygiene, and occasional appropriate, internally administered, doses of strychnine, prescribed by a competent physician, may suffice for a complete recovery.

## THE CHANGES OF THE LEUCOCYTES IN DISEASE AS AN AID TO DIAGNOSIS AND PROGNOSIS.*

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AMONG all the factors in the development of modern medicine, which have definitely placed it among the exact sciences and removed it from its former condition—a cosmos of inexact and empirical conclusions—none have been so potent as the application of laboratory methods to each and every problem presented. The pathological laboratory, the bacteriological laboratory, the laboratories of chemistry, of pharmacology, and of hygiene, have each done great service in this development. And yet not until a comparatively recent time has an attempt been made to extract the clinical essence, as it were, from these various storehouses of knowledge, and to turn to a purely clinical laboratory for a solution of those most practical and important problems—the diagnosis, the prognosis, and the treatment of disease.

The rapid opening of new lines of investigation and the ever-increasing number of methods of examination have now made this laboratory an indispensable adjuvant to the physician and surgeon. Among all the subdivisions of the subject, none is more important than that devoted to the study of the blood and its changes in health and disease. Yet this is not to be wondered at, when we consider the constitution of the blood and the multiplicity of its functions, to carry oxygen and food-stuffs to the tissues, to carry away the waste products of cellular metabolism to the lungs and the excretory organs, to act as a medium for the transmission of the internal secretions of various glands, to aid in equalizing the temperature and water contents of the body, to furnish the agents designed to destroy or remove invading bacteria and other foreign substances, and to furnish the substances out of which the pigments and many of the various secretions of the body are elaborated.

Indeed, the work upon the blood has been of such magnitude that division and subdivision have become necessary, so that now, broadly speaking, such work may be differentiated as follows:

(1) The study of the red blood-corpuscles and hemoglobin, of paramount importance to the physician in the diagnosis and prognosis of the primary and secondary anemias, of great aid to the surgeon in deciding for or against the advisability of operation, and extremely useful to the therapeutist in determining the value of various forms of treatment.

(2) The study of the leucocytes or white

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blood-corpuscles, to the value of which this article will devote itself exclusively.

(3) The study of the chemistry of the blood and the quantitative and qualitative study of the substances normally and abnormally present, an enormous field, waiting only for the development of methods of greater refinement in biochemistry to throw open to an eager band of explorers, in the hope of settling many of the unanswered questions regarding the normal functions of the body as well as its pathological variations.

(4) The relation of the blood to that broadest and most important question, serum diagnosis and immunity, made doubly interesting by the recent brilliant contributions to this subject by Ehrlich, Wasserman, and others.

That the subject of our discussion, the leucocyte, is an important cell in the animal economy seems probable from the fact that it is met with, as shown in Metchnikoff's brilliant studies, even in the very low forms of animal life where its functions and characteristics seem to be almost identical with those among the higher members of the animal kingdom. From Virchow's first description of the presence of an increase of these cells in various diseases and pathological conditions, their study has been a favorite one with both the pathologist and the clinician, and has been a great factor in giving us a clearer conception of various morbid processes.

The number normally present in human blood per cubic millimeter is given by various observers as from four thousand to ten thousand, while the proportion of the various forms of leucocytes (for, as is well known, the white blood-cells are not all of one kind but show several varieties) is given in the case of the small mononuclear leucocytes from fifteen to twenty-five per cent., the large mononuclear and transitional forms from four to eight per cent., the polymorphonuclear neutrophiles from sixty-five to eighty per cent. and the eosinophiles from one to five per cent. in the different tables. From a series of observations made by us upon fifty normal human beings, we concluded that the average normal number of leucocytes per c.mm. was six thousand five hundred, of which seventy-four per cent. should be polymorphonuclear neutrophiles, eighteen per cent. lymphocytes, six per cent. large mononuclear and transitional cells, and two per cent. eosinophiles.

Work done since the completion of this series has led us to suppose that the above figures give rather too high percentages in the case of the neutrophiles and eosinophiles and rather too low in the case of the lymphocytes. Before discussing the changes in the total number of the leucocytes or in the relative proportion of the various forms as an aid to diagnosis and prognosis, let us briefly sketch the various theories held regarding the seat and mode of origin of the various kinds, and the significance of leucocytosis, what it represents in its broadest sense and what it tells us as regards the condition of the hematopoietic centers and of the body as a whole.

Ehrlich, with whose name the study of the leucocytes will always be indissolubly connected, believes that the lymphocytes are formed in the lymph-glands, the neutrophiles and eosinophiles in the bone-marrow from preëxisting neutrophilic and eosinophilic cells, while the spleen is normally not an organ of hematogenesis, but rather of hematolysis.

Uskoff, on the other hand, believes that all the white blood-cells are derived from one form, the lymphocyte, the growth occurring mainly in the circulating blood, and Gulland, who has the same belief, adds that "the especial kind found in each locality depends upon the surroundings and conditions in which the cells live," a view to which Pfeiffer subscribes, opposing Ehrlich's ideas and basing his conclusions that the granulations are not specific upon his observations that the same granules may be present in different types of cell, and that different granules may be present in the same cell.

According to the recent work of Korokoff, on the other hand, the spleen plays the most important rôle in the origin of the lymphocytes, while Pappenheim believes that these cells are derived from preëxisting cells of similar character in the bone-marrow.

Hardy and Kanthack possess still different ideas on the subject, namely, that the different leucocytes are of distinctly different nature and take their origin in different parts of the body, the lymphocytes from the lymphoid tissues, the neutrophiles from the intestinal tract, and the eosinophiles from the serous membranes.

While some other views are held regarding the mode of origin of the various forms, the above theories will illustrate how widely different are the views held regarding this question, Ehrlich believing firmly in the specificity of the cell-granules and, *ipso facto*, in their distinctly separate mode of formation, while numerous observers believe that all the leucocytes are derived from one original cell, the lymphocyte.

Although there are some differences of opinion, yet there is much more unanimity regarding the function of the leucocytes and the significance of leucocytosis. The brilliant work of Metschnikoff followed by the observations of Büchner, Gabritschewsky and others, has shown beyond a doubt that one, and probably the most important function of the leucocytes, or at least of those forms present in the blood in largest amount, the neutrophiles, is one of phagocytosis, *i. e.*, the removal or destruction of bacterial, chemical or mechanical irritants, or the products of bacterial activity.

The discovery of a distinct bactericidal property of the serum by Hankin, Büchner, Behring, and others, has led to the development of a humoral in place of a phagocytic theory of immunity, but the demonstration that the bactericidal agent in serum, lymph, and exudates is a nucleoproteid derived from the leucocytes, has drawn these two theories of immunity closely together, and has accentuated the value of the

leucocyte in the defense against disease-producing bacteria and toxins.

Hankin especially has insisted upon the secretion by the leucocytes, especially the eosinophiles, of an alexin, which is bactericidal, while Hahn, Van der Velde, and many others, have demonstrated that the alexins are the secretory products of the leucocytes, especially the neutrophilic cells. As to the function of the lymphocytes, according to Ehrlich, although not to all observers, this form of leucocytosis is passive, *i. e.*, not due to the influence of chemotactic substances, and probably is of little or no importance in phagocytosis.

Besides their most important rôle, one of defense, the leucocytes are undoubtedly important factors in the resorption of the products of cellular destruction and necrosis, in transforming these products and in aiding their elimination, while possibly they play an active rôle in nutrition and may be regarded as cells filled with what may be called an alimentary reserve.

In discussing leucocytosis, it is essential to first draw the distinction between the physiological and pathological type, and then to discuss the different varieties of the latter.

The physiological leucocytosis is met with during the digestion of foodstuffs, in pregnancy, at least in the case of the primiparous, in the newborn, after cold baths and violent exercise (in the last two-mentioned conditions, this is more apparent than real and is probably due to vasomotor phenomena and an unequal distribution of the leucocytes in central and peripheral circulation). Clinically, the digestive leucocytosis is of importance because its absence is indicative of some disorder characterized by distinct pathological changes in the gastro-intestinal tract, although it is not, as originally supposed, pathognomonic of gastric carcinoma, while the leucocytosis of pregnancy and of infancy should be remembered to prevent a misinterpretation of blood-findings in these conditions.

A practical point in connection with physiological leucocytosis is that it teaches us that the blood should never be examined for pathological changes during the height of digestion, but rather on a fasting stomach when the degree of leucocytosis will be a criterion of one factor alone and not of a combination of two factors, one physiological and one pathological.

The subject, pathological leucocytosis and the aid derived from it in our conception of the nature and treatment of disease, is so large that it will be possible here only to touch upon the more important findings in the field. As we have different forms of white blood-cells, so we have different forms of pathological leucocytosis according to which of these forms is increased; thus we may have (1) the common or polymorphonuclear neutrophilic leucocytosis, the condition met with in most infectious diseases and inflammatory conditions; (2) eosinophilia or eosinophilic leucocytosis, a rarer but no less interesting condition, met with regularly in various diseases of the skin, in bronchial asthma and myelogenous leucemia, and various diseases due to intestinal parasites, besides being met with occasionally in a variety of other conditions; (3) lymphocytosis, the passive leucocytosis of Ehrlich, the condition met with normally in childhood and present in various morbid processes associated with diseased conditions of the lymphatic apparatus and in a few of the acute infectious diseases, as whooping-cough and typhoid fever.

The opposite condition, a diminished number of leucocytes, a leucopenia or hypoleucocytosis, is met with regularly in certain diseases and is of no less value in determining diagnosis and prognosis. Whether this condition is due to the presence of substances possessing the property of negative chemotaxis, or whether a slowness and insufficiency of leucocytic production or unequal leucocytic distribution is the cause, it is impossible to say at the present moment. The work of Bohland on the effect of typhoid toxins upon the leucocytes, however, seems to show that in some cases at least the first theory is tenable.

Let us consider now, briefly, the important diseases in which the changes in the leucocytes are of aid in diagnosis and prognosis, going first into the field of internal medicine, then into that of surgery. Obviously, the field is so vast that we will here be able merely to touch upon many phenomena the importance of which would in reality justify a much more exhaustive consideration.

Although in the anemias we devote most attention to the study of the red corpuscles, yet in determining the prognosis in the severe cases valuable signs are to be derived from the character of the leucocytes, a diminution of leucocytes below normal and a relative increase of the small mononuclears being bad prognostic signs. Let us briefly cite two cases in point, both seen at about the same time, both in practically the same condition, and both suffering from the same disease, pernicious anemia. The red-blood and hemoglobin counts were practically the same in each, but one showed numbers of megaloblasts and only between two thousand and three thousand leucocytes per c.mm., the other very few megaloblasts and between seven thousand and eight thousand leucocytes; the former patient died in less than a week, the latter recovered from that attack and did not die until three years later, from a recurrence of the condition, and this time the blood picture was practically the same as in the first case, *i. e.*, many megaloblasts and marked leucopenia.

In the case of the acute infectious diseases, the greatest aid from leucocyte counting has come in typhoid and malarial fevers, tuberculosis, influenza, whooping-cough, measles, scarlet fever, diphtheria, and pneumonia.

The presence of a diminished number of leucocytes in a case characterized by a persistent fever is of the greatest aid in differentiating typhoid fever, especially in the early stages of the

disease, before the Widal reaction is obtainable, from central pneumonia, appendicitis, and various inflammatory and suppurative processes, all of which are characterized by a marked leucocytosis. So many cases of suppurating ovarian cyst, pyosalpinx and other conditions characterized by persistent fever have been mistaken for typhoid fever that a blood examination, if only the examination of a freshly prepared slide, should always be made in every case of such nature, when the presence of a leucocytosis will exclude typhoid fever. Naegeli, in a recent contribution of great value, gives the results of his studies on the leucocytic changes in the various stages of typhoid fever, from which he concludes that favorable prognostic indications are the early appearance of the eosinophiles, the moderate diminution of the polymorphonuclear neutrophiles, and the extreme increase of the lymphocytes. The presence of leucocytosis in typhoid fever points at once to some complication, often a perforation, and in the asthenic cases, in which symptoms are slight, due to the intense toxemia, this may be the only means of diagnosing such a condition, and, *ipso facto*, operating, and very possibly saving the patient's life. This point cannot be too strongly insisted upon, for the only hope of preventing typhoid perforations from terminating fatally lies in a rapidly reached diagnosis and immediate operation.

In malaria, a diminution of leucocytes is regularly met with, and, unless the parasite be found, even the most typical case from the clinical standpoint should not be so diagnosed in the presence of a leucocytosis, as occasionally cases of pyosalpinx and other supurative conditions with an absolutely regularly intermittent temperature are met with, and here the presence of a leucocytosis is of the greatest aid.

The absence of a leucocytosis in cases of influenza, and the distinct diminution in the cases of the abdominal type of the disease are of value in arriving at a differential diagnosis; for in the ordinary form of the disease, in the catarrhal stage, the absence of leucocytosis may serve to differentiate it from whooping-cough, in which a leucocytosis of from fifteen to twenty-five thousand per mm. is present, with a marked relative increase of the lymphocytes, as shown by Frölich and Meunier and De Amicis and Pacchioni. Our own observations in five cases of the former disease in which we have examined the blood are entirely confirmatory of these results, while in the past year, during an epidemic of whooping-cough, the absence of a leucocytosis has made us diagnose as influenza two cases which clinically presented all the signs of the catarrhal stage of pertussis, a diagnosis which was borne out by the future conduct of the cases. In the abdominal type of influenza the distinct decrease of leucocytes is of value in differentiating the condition from appendicitis, a problem of no slight difficulty in the case of very young children.

In the case of the early diagnosis of scarlet fever and measles the presence of a leucocytosis is significant of the former, of a leucopenia of the latter disease; while prognostically in scarlet fever the presence of a distinct eosinophilia beginning on the second or third day and reaching from eight to fifteen per cent. in the second or third week is a favorable import prognostically. These results of Kotschetkoff have been confirmed by us in four cases, all of which recovered and all of which showed an eosinophilia of over six per cent.

In diphtheria, Engel regards a high percentage of myelocytes as an unfavorable sign, while Besredka believes that if one or two days after the injection of the antitoxin the percentage of polymorphonuclear neutrophiles is sixty or more, the prognosis is good; with a higher temperature and fifty per cent., the prognosis is bad; while, if below fifty per cent., the prognosis is fatal.

The absence of a leucocytosis in uncomplicated tuberculosis is of value, in the first place, in differentiating tuberculosis from other inflammations of various organs and tissues characterized by an identical train of symptoms, while the appearance of a leucocytosis in tuberculous cases points at once to there being a secondary infection with pyogenic micro-organisms, which may be of the greatest value in determining upon immediate operation, in the bone and joint cases especially.

The presence of the characteristic leucocytic picture in the case of lymphatic and splenomyelogenous leucemia gives us the only exact method of diagnosing these cases from tuberculous or syphilitic adenitis, Hodgkin's disease or sarcomatosis of the lymph gland on the one hand, and on the other, from Banti's disease, chronic malaria with enlarged spleen, tuberculous, syphilitic, or malignant growths of the spleen, hydronephrosis or renal or ovarian neoplasms. We well remember one case sent to the Johns Hopkins Hospital to be operated upon for a large ovarian cyst, where an examination of the blood at once showed it to be a case of splenomyelogenous leucemia, in which, obviously, a very different mode of treatment is to be employed.

There is not time for us to touch here upon the work of Löwit in regard to his supposed intra- and extraleucocytic protozoa of leucemia, but the work of Türk and others throws grave doubt upon Löwit's conclusions.

As to the prognosis in leucemia, Taylor describes marked degenerative changes in the leucocytes toward the end of the disease, while Rosenfeld, from a careful clinical and pathological study of three cases, thinks that in lymphatic leucemia, the large mononuclears appear when the bone-marrow is affected, a lymphadenoid degeneration taking place; and when such a blood picture is found, it means that the disease is rapidly leading to a fatal termination.

The presence of a marked increase of eosinophiles in the blood will serve to differentiate bronchial from renal or cardiac asthma. The greatest value of the leucocyte counting in pneumonia is that by its grade we learn some-

thing of the severity of the process, while if the leucocytes do not descend to normal with the drop in temperature, we know that the condition is one of pseudocrisis and not a true crisis. In this disease, as in practically all other conditions usually associated with a leucocytosis, the presence of a leucopenia is the most unfavorable of signs, as it points to an absolute lack of reactive tendency on the part of the organism, and is almost invariably associated with a fatal issue.

Very interesting in this connection and also in connection with chemotaxis is the recent work of Bentvegna and Carin, who found that after doses of arsenic, iodine, and bichloride of mercury which were not fatal, a marked leucocytosis was found, while in the fatal cases a diminution of leucocytes occurred and with this a diminution in the bactericidal powers of the blood. This is of especial interest because it shows that chemotactic powers may be possessed by simple inorganic chemicals as well as by the complicated toxins of bacterial and cellular activity.

The constant presence of a mild grade of leucocytosis after ether anesthesia and of a slight decrease in the number of leucocytes after chloroform anesthesia (Benassi) is of especial interest to the surgeon. Among other cases of toxic leucocytosis, may be mentioned that due to various drugs, as several of the coal tar remedies.

We have but recently seen a case of severe acetanilid poisoning in a young girl who took the drug secretly, in which the leucocytes reached thirty thousand per c.mm., twelve per cent. of which were eosinophiles; undoubtedly further study along this line may prove of great aid in diagnosing various forms of secret drug habits.

Among the most interesting diseases with which the blood changes are associated may be mentioned those due to animal parasites, especially those invading the intestinal canal. The presence of an increasing number of cases of anchylostomiasis in the United States and the probability that many more of similar nature will be met with among the soldiers returning from the Philippines should lead us to make a most careful examination of the stools in all cases of progressive anemia associated with marked eosinophilia; while, we think, the diagnosis of trichinosis can now be made even in the most sporadic and atypical of cases by the remarkable increase of the eosinophile cells in this disease.

Since our original report in the *Johns Hopkins Hospital Bulletin*, April, 1897, of the presence of a marked eosinophilia in trichinosis and the diagnostic value of this blood phenomenon, especially in differentiating this disease from other diseases associated with gastro-intestinal or muscular symptoms, numerous observations have been reported, all tending to substantiate this view. We reported three additional cases (*Journal of Experimental Medicine*, 1898, III, No. 3, and MEDICAL NEWS, 1899, January 7), all of which showed from forty to sixty-eight per cent. of eosinophiles in the circulating blood, and trichinæ in the muscle, of which a small portion was removed in each case for examination.

Atkinson (*Philadelphia Medical Journal*, June 3, 1899) reports a case substantiated by muscle examination, in which the marked eosinophilia led to the diagnosis being made, while Blumer and Newman (*American Journal of the Medical Sciences*, January, 1900) report a family outbreak of the disease in which nine persons were affected, and where the symptoms markedly resembled those of typhoid fever. The diagnosis was made from the blood examination, which showed a leucocytosis, with a great increase of the eosinophiles, while trichinæ were found in excised portions of the muscle. Stump (*Philadelphia Medical Journal*, June 17, 1899) reports three cases diagnosed by the marked eosinophilia, and Kerr (*Philadelphia Medical Journal*, August 25, 1900) reports two cases, in one of which the diagnosis was not even suggested until after the blood examination. The leucocytosis in each of Kerr's cases reached twenty-five thousand, while the eosinophiles reached the remarkably high percentage of 68.7 per cent. and 86.6 per cent.

Gwyn (*Centralblatt für Bakteriologie*, 1899, XXV., p. 746) reported a case diagnosed by the marked eosinophilia and recently Gordinier (MEDICAL NEWS, December 22, 1900) has reported two cases in which the diagnosis was made by this means, and in which he gives a careful review of the literature of the subject. As to the mode of origin of the eosinophiles in these cases, the views of the different observers differ somewhat, we believing that they may possibly be derived from the neutrophiles, the transition taking place in the affected portions of the muscle, while Howard believes that they are derived from the plasma cells, which, in turn, are probably derived from the large mononuclears. Kerr, from a careful study of his two cases, differs from Howard and is opposed to the view that they are derived from the large mononuclears.

A very recent observation by Courmont, that there is a distinct leucocytosis of the neutrophilic type, these cells often reaching ninety-five per cent., in all cases of rabies, seems liable to prove of great value in determining whether or not a suspected animal is affected with this disease. Regarding the value of leucocyte counting in surgery, we feel that the question is no longer *sub judice*. Keeping in mind the exact nature of leucocytosis and how it represents the conflict of two factors, virulence of infection and resistance of patient, we can derive a vast amount of knowledge from its study in surgical cases. If we have the clinical picture of a severe infection, peritonitis for instance, and the leucocytes are markedly subnormal, operative procedures are probably useless, as the prognosis is almost surely fatal; in cases of a high or moderate leucocyte count the resistance of the patient is greater and the prognosis better.

There is probably no disease of importance to surgeons in which leucocyte counting is of more

value than in appendicitis, for the following reasons: (1) Its presence or absence tells whether we are dealing with an inflammation of the appendix, or with a case of hysteria, floating kidney with twisted ureter, gall-stones or renal calculus, or the gastro-intestinal type of influenza, these conditions not being associated with a leucocytosis. (2) The grade of the leucocytosis tells us much regarding the severity of the infection, a safe rule being that if the leucocytes are above eighteen thousand or twenty thousand, operate immediately; if below, wait and watch leucocyte count and symptoms with great care to see if the process is diminishing or progressing. (3) A systematic counting will show whether the condition is becoming better or worse, and will furnish the safest of all criteria as to beginning perforation and general peritonitis, with necessity for immediate operation. (4) It may be our only means of diagnosis in a fulminating case, especially in children, in whom pain, nausea, and muscle spasm may be practically absent, due either to the appendix becoming gangrenous almost immediately, or to its being situated deep down in the pelvis. In connection with the value of leucocyte counting in appendicitis, let me briefly cite two cases.

*Case I.*—A patient in whom immediate operation was undesirable on account of his poor general condition; the leucocytes, counted every four hours, varied between fifteen thousand and twenty thousand for twenty-four hours, when they rose suddenly to thirty-two thousand; operation was immediately performed, and a beginning perforation found in the appendix.

*Case II.*—A young boy, who, the morning after a summer dissipation of strawberries, ice-cream and soda-water, had an attack of nausea with slight epigastric pain, but no rise of pulse or temperature and no local swelling or tenderness. The nausea rapidly yielded to small doses of bismuth, but as the pulse rose from about eighty to ninety-five, and the child looked ill, a leucocyte-count was made, and seventeen thousand leucocytes per c.mm. found. Appendicitis was considered probable, although the temperature did not begin to rise until the second morning. At two o'clock P.M. it had reached 100° F. The leucocytes, which had remained about seventeen thousand, suddenly jumped to thirty-four thousand. An operation was immediately performed and an enormously long, completely gangrenous appendix, seated almost entirely in the pelvis, with a fresh perforation about its middle, and a beginning peritonitis, were found. Both patients recovered.

I know that these are rather rare cases, yet they are liable to be encountered by any physician, and they exemplify the immense aid blood examination may be. In the second case, it undoubtedly saved the patient's life. No less important is leucocyte counting after an operation; many cases present all the symptoms of a general peritonitis, nausea, vomiting, and constipation, with a tympanitic distended abdomen, in which the determination of the exact condition is a matter of immense importance. Peritonitis is associated almost invariably, and in practically all cases in which operative procedures offer any hope of success, with a leucocytosis, and as an autointoxication from the gastro-intestinal tract shows no or very slight leucocytic increase, we at once see what a valuable aid the leucocyte count may be. The first condition is to be treated by operation and drainage, the second by purgation, and the life of the patient depends upon our correct interpretation of the clinical picture presented. We have seen several cases within the past few months in which the leucocyte determination alone prevented the surgeon from operating secondarily, and in which the subsequent course of the case showed that the condition was one of auto-intoxication. Thus we cannot agree with Hubbard, Deaver, and others who assign but little practical value to leucocyte counting in surgery. We feel that some of them at least have missed the vital point from their blood examinations when they reach this conclusion. It is not the establishment of fixed rules between the grade of leucocytosis and the special pathologic condition, as they attempted and naturally failed to do, that is of great importance, but it is the results obtained by frequently counting the leucocytes in the individual case which is of inestimable value in showing whether the condition is lessening or progressing. In numerous other surgical conditions the presence or absence of a leucocytosis is of very great assistance, as for instance in intestinal obstruction, where the entrance of gangrene and localized peritonitis is shown by an increase of the leucocytes; in differentiating abscess of the liver from malaria, duodenal catarrh or impacted gall-stones, of which two interesting cases diagnosed by blood-examination have been reported by McLean; in diagnosing pyosalpinx from other pelvic conditions or from typhoid fever or malaria, osteomyelitis from rheumatism or neuralgia, while the lack of increase of leucocytes in uncomplicated tuberculosis is of aid both in differentiating the various forms of arthritis, and in determining the presence or absence of secondarily invading pus organisms. The presence of a marked leucocytosis associated with a diminution of red blood-corpuscles in the case of hemorrhage is of great help in determining the cause of shock, as well as in reaching a diagnosis of the various forms of internal hemorrhage. This, in brief, tells something of what the study of the changes in the leucocytes has done for the physician and the surgeon in diagnosing and treating diseases, and in helping each in arriving at a rational prognosis.

It has rendered possible the diagnosis of a number of diseases, as the leucemias and trichinosis, besides assisting markedly in the diagnosis of many more. It has given valuable aid in the prognosis of all forms of infection and inflammation, as pneumonia, peritonitis, and appendicitis; in the anemias of scarlet fever, and in many other diseases.

It has furnished us with the means of discriminating diseases which present clinical pictures of marked similarity, such as central pneumonia and typhoid fever, appendicitis and conditions with similar symptoms but with no infection, peritonitis and auto-intoxication from the intestinal tract, lymphatic leucemia and Hodgkin's disease, myelogenous anemia and Banti's disease, and many others.

It has furnished the surgeon with a valuable diagnostic sign in all cases of infection and inflammation, besides being a criterion of great value in determining whether the process is diminishing or increasing. It has done these things and many more but it is not infallible.

It is not worthy, as yet, of the blind abiding faith placed in it by some, nor should it receive the blame and criticism it has from others, especially many of our surgical brethren, who, too often have combined poverty of technic with deficiency of knowledge of the real significance of these leucocytic changes in censuring what a greater knowledge would have made them praise. Let us rather realize both its uses and its limitations; let us regard it as a valuable aid in diagnosis and prognosis, and yet not the only staff upon which to lean; let our diagnosis be reached by a coördination and comparison of this with all the other symptoms of the disease in question. Let us study the blood changes more and more carefully and have an ever-increasing number of facts and observations at our disposal as to its changes in health and in disease, and if such a condition is ever reached when the physician and surgeon both contribute generously to this comparatively new branch of knowledge, we feel sure that the changes in the leucocytes will be of greater value to the clinician, to the surgeon, to the therapeutist and to the pathologist, in the diagnosis, prognosis, etiology and treatment of disease.

## A STUDY OF BURNS.

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"A STUDY of Burns, with a Plea for a More Rational Treatment," by Dr. Griffith, published in the MEDICAL NEWS of August, 1901, deserves the earnest attention of the medical fraternity. Having been engaged along that line of study and work for several years, to me the paper was of intense interest. To the major part of what the Doctor says I give most hearty assent, but there are some points from which my personal experience compels me to differ. The alarming frequency of accidents from burns and scalds in the present era of the so common use of inflammable materials and electricity demands the earnest endeavor of physicians to discover the best methods of treatment for the prevention of both suffering and lifelong disfigurements. Dr. Griffith says: "The knowledge of sepsis in surgery has made it obligatory upon the surgeon to prevent it in surgical wounds. Burns and scalds are wounds as much as an incision and demand as careful treatment." This is true and it is to be regretted that the Doctor did not emphasize the fact that they demand the *same treatment* as an incision. Unfortunately, while the demand for antiseptic treatment in surgery is stirring surgeons everywhere to thought and action, the poor victims of burns are still subjected to all sorts of acids, oils, paint and other horrid applications that not only tend to increase their suffering, but cause loss of life and disfigurement.

Possibly the charge often made, that the science of medicine is not a science, has one of its most potent arguments in the fact that with the passing centuries other sciences have opened up newer and broader vistas with avenues for advancement, while medical science often, as in the treatment of burns, has only changed since the age of Hippocrates from lard and aromatic oils to carron oil, which so soon produces anything but an aromatic odor. Why this inertia in the treatment of burns and scalds when surgery has made such rapid strides? "Suppuration has been considered by most surgeons as inevitable," says the Doctor, and it is still so considered by most of them; but those who have made them a special study now know that in burns as in surgical wounds, without the lodgement of the pus germ in the wound there will be no pus; if there is no pus-formation, which is but cell destruction, there will be no loss of tissue; and if there is no destruction of tissue, no eschar with its attendant deformity remains.

The logic of the argument is easily demonstrated in every case. If this proposition be true, the all-important business of the surgeon is to take the basic principle of treatment, *asepsis*, and, strictly adhering to it, he will be sure of successful results. In Dr. Griffith's very comprehensive article I find mention made of pain as a factor to be considered. A dressing that prevents pain is surely worth considering. To relieve the patient without narcosis, with its frequently deleterious effects, is a boon to the patient and a credit to the physician. A perfectly antiseptic dressing will prevent pain after the first shock to the sensory nerve-endings. Without this, pain and suppuration are inevitable; with it, even with uncleanly surroundings, both can be prevented. Antisepsis has lifted the hideous nightmare of helplessness when the physician is brought face to face with a severe burn. Now with this weapon at his command, the physician can take the most unfavorable case in any stage with the positive assurance that he is master of the situation; no matter how severe the case, he can leave the patient well and not disfigured.

After many years of treating as severe cases as are often seen I have found four negations to be observed in order to obtain perfect results in the treatment of burns.

1. Never use a dry dressing.

2. Never forcibly remove the skin or deeper tissues; prevent their removal if possible. Keep the wound free from pus with a liquid antiseptic, and Nature will remove the dead tissue by

healthy granulations beneath. The skin is a protection.

3. Never use any oils or salves. If these are used, pus will form.

4. Never change dressings too frequently. A perfectly antiseptic liquid dressing will keep the wound clean and odorless; hence change is not necessary.

The earlier a burn is dressed the better for the comfort of the patient, but it can be treated at any stage with equal success. After months of faulty treatment I have seen the pus disappear in four or five days and a healthy granulation appear, healing perfectly and leaving no scar. If the patient has been in good health previously, constitutional treatment is seldom needed—no stimulants, no catharsis, no sedatives after the first hypodermic to allay the sensory nerve irritation. Antiseptic dressing prevents further constitutional disturbance.

This paper would hardly seem complete without some hints as to dressings. In individualizing dressings we will mention first those that should never be used and the reasons why.

I never use oils because they are not antiseptic and do not prevent pus formation. Nitrate of silver and acids often form eschars by breaking down instead of building tissues. Adhesive straps, by pressure, prevent healthy granulation. Above all carbonate of lead should be avoided for its poisonous effects. I saw two brothers who were burned in a gas explosion so poisoned and disfigured by the lead dressing as to make them monsters of hideousness. After months of torture both to themselves and to the mother who cared for them, their fingers dropped off and their faces were distorted beyond recognition. Another boy burned at the same time and just as badly, with other treatment recovered without disfigurement. Carbonate of soda and hydrogen dioxide in superficial burns are often useful when one cannot get something better, but they do not vitalize the tissue and for speedy healing this is very essential. After witnessing the effects of all these and more I have discarded them all and now use only glameide, which I find to be a perfect antiseptic and vitalizer. It is my sheet-anchor. It may be that when possible to use it, the pasteboard box may secure protection to the granulations when forming, but in a case that I have just treated I think that it would be hardly possible to use it. A little girl, two years of age, sat down in a kettle of hot soup just removed from the stove and carelessly placed upon the floor. She was literally cooked from her feet to the epigastric region both front and back except the knees where they were above the edge of the pot. I hardly think, with Nature's ceaseless calls and a two-year-old child's judgment, that the box treatment would have been expedient. This child, with no medicine, and only the glameide dressing, was healed and walking about in five weeks. Not a particle of pus formed notwithstanding the disadvantages of age and location. Not an eschar except a small spot where she broke the granulations during the healing process and caused profuse bleeding.

My method of dressing is, first, to give the patient a hypodermic, just enough to allay the intense pain from injury to the terminal sensory nerves. Second, arrange the bed upon which the patient is to lie. If the body is burned, I place a piece of rubber tissue on the bed large enough to encircle the body. There are two reasons for this: It prevents evaporation from dressing and wetting of bedclothes. Third, take a piece of absorbent cotton an inch thick and large enough to cover the burn on the body. Fourth, into a platter pour the antiseptic diluted with ⅓ hot water (the heat is to prevent the chill to the denuded surface); then dipping the cotton carefully into the warm dressing, place it on the rubber. Over this *be sure* to put some thin and old cotton or gauze, also wet in the dressing and carefully laid over the cotton to prevent the adherence of cotton to the wound. Lift the patient carefully and lay him upon the dressing; bring the cotton cloth carefully over the wound, then the saturated cotton, then the oil silk or rubber tissue and fasten carefully, snugly but not tight. Wherever the burn is, the treatment is the same until all is covered. Don't put the patient on a hard bed. Keep him comfortably warm.

## MEDICAL PROGRESS.

### SURGERY.

**Perforation of the Rectum.**—The following case of perforation of the rectum into the peritoneal cavity treated by laparotomy and suture and followed by recovery is reported by G. R. TURNER (Lancet, May 24, 1902). A seventeen-year-old youth, admitted April 17, 1901, had been trying to vault over a broom-stick and failed. The stick passed up into his rectum, tearing a hole in his trousers and causing much pain and hemorrhage. On withdrawing it it was covered with fecal material for about two inches. He was taken to the hospital, collapsed and suffering much pain. He was pale and shivering and vomited three times. On examination a tear of the anus about one inch posteriorly was found which passed up the posterior wall of the rectum for a short distance. There was also a rent in the anterior wall. The mucous membrane beyond was smooth and feces were present some three inches from the anus. The examination was difficult and indefinite, owing to spasm and pain. After this examination the patient vomited again and there was much hypogastric pain. The abdomen was rigid to palpation and moved well with respiration. He was first seen by Turner eight and one-half hours after the operation; an anesthetic was given and a rectal examination in the lithotomy position was made, at which an extensive tear of the anterior wall was found passing through the recto-vesical fold of the peritoneum into the general peritoneal cavity. A sound passed through the rent was found to touch the anterior abdominal wall. There was also a tear on the posterior wall, continuing with the damage to the anus posteriorly. A four-inch incision was made above the pubes and fecal matter and foul fluid were removed from the peritoneal cavity. After much difficulty a transverse rent two inches long was found in the peritoneum between the bladder and the rectum, the serous coat having been stripped off the

posterior wall of the bladder. The examination was aided by an assistant's finger in the rectum. By pulling on the bladder and by the aid of long clips the rent was eventually brought sufficiently near to the surface to admit of suture with catgut. This was effected by means of long curved needles on handles and a cleft-palate rectangular needle. The peritoneum was carefully cleansed by sponging both before and after the suture of the rent and subsequently gently irrigated with water. The irrigation was purely local. A large glass drainage-tube was inserted and some strips of cyanide gauze were passed down to the peritoneal aspect of the rent, and another glass drainage-tube was introduced into the rectum beyond the tear of the bowel. After the establishment of a final fistula which healed promptly the patient recovered.

**Linen Sewing-machine Thread for Ligatures and Sutures.**—The question as to what ligatures and sutures it is best to employ in any given case is one which must often engage the attention of all surgeons of large experience. A mere glance at the list of materials employed at different times for the purposes in point must convince anyone that there is still a difference of opinion as to which is best. Most surgeons of former times used the old hempen thread and silver wire, then catgut in all its forms, then kangaroo-tendon and ox-aorta, silk of different varieties, silkwormgut, horse-hair and, finally, celluloid hemp. Each has been shown to have its disadvantages and advantages. A. E. J. BARKER (Lancet, May 24, 1902) draws attention to ordinary linen sewing-machine thread. He has used this now for ligatures and sutures in a very large number of cases for the last two years, indeed, almost exclusively, and has found it to possess the following good points: (1) It can be procured everywhere all over the world wherever there is a depot for good sewing-machines, for which it is specially spun. (2) It is relatively very cheap. (3) It can be easily sterilized by boiling in plain water and then stored in methylated spirit. (4) It is enormously strong and ties a most uncompromising knot. (5) It is easy to work with and runs easily through the eye of any suitable needle, having been spun with special care in order to travel easily through a sewing-machine needle. He has used several sizes and now limits these to three, No. 40, which is as thick as need be desired for the abdominal wall or ligature of the larger arteries; No. 60, which is thinner but still very strong, and No. 90, which is as fine as can be desired, for example, in suturing the intestine. He finds it convenient to use No. 40 white, 60 red, and 90 black. He prepares it by simply boiling for an hour in ordinary water and then keeping it in alcohol. A little of the dye comes out in the finer sizes by boiling, but does not appear otherwise to alter the thread, which can be boiled over and over again without rotting. One of the greatest tests of such a thread is an enterectomy or a gastro-enterostomy. Here he has given it wide trial and has not yet known it to behave in any but the most satisfactory manner. Many of his patients are now going about with it both in the stomach and in the intestine. Where it can be seen in the skin, as, for instance, in the long wound of a breast amputation, its non-irritating nature can be studied when it has not been tied too tight. It comes out at the end of ten days or so just as it went in. He cannot help thinking that to those who work in out-of-the-way places and often find it difficult to obtain the usual traditional materials of good quality, this linen thread will prove a boon. It probably is not absorbed at all, but appears to be none the worse for this. Cotton thread is not strong enough in his experience for surgical ligatures and, moreover, rots if boiled, but linen thread is different and the flax fiber of which it is made is long and very smooth.

**Chloride of Calcium and Hemorrhage.**—It is well known that in subjects of hemophilia the extraction of a tooth can cause a rebellious hemorrhage and even lead to more or less grave results. C. E. WALLIS (La sem. méd., 1902, No. 20) had occasion to observe a 25-year-old woman presenting a hemorrhagic diathesis. This slight operation provoked a rush of blood which lasted thirty-six hours. The teeth of this unfortunate woman were in a wretched condition, so that extraction was really necessary because their bad state had caused dyspepsia. In order to carry out this treatment Wallis thought of trying chloride of calcium with a hope of increasing the coagulability of the blood. Therefore he gave this medicine in small doses for one week previous to further operation. When he removed at the end of this period one of the incisors he was pleased to find no bleeding worth mentioning. He therefore continued the medicine and found that he was able after a few sittings to remove all of the teeth and roots without any severe hemorrhage. Since then he has had occasion to note a number of similar cases which he treated in the same manner with good results. The only unfortunate effect of chloride of calcium is that of constipation, which becomes rather marked after the medicine has been administered for three or four weeks.

**Gastro-enterostomy.**—Modifications of operations are usually redundant, but when surgeons of international importance define their choice of procedure in interventions as important as that of gastro-enterostomy it is worth while to consider their description in detail. F. TERRIER (Rev. de chir., 1902, No. 4) gives the steps of this operation as performed by him in the following terms: (1) A median laparotomy between the xiphoid cartilage and the umbilicus, extending successively through the skin, the subcutaneous cellular tissue of the region, the linea alba, and the subaponeurotic fat, and finally the peritoneum. Each side of the abdominal incision is then held lightly by Kocher clamps. (2) Exploration of the stomach practised with care to show the greater or less extent of its lesions, and to determine whether it is possible to operate on its posterior or anterior surface and, finally, whether there are adhesions between the stomach and the transverse colon or the omentum. During this examination it may be necessary to break down adhesions. (3) The colon is then drawn up and out of the upper part of the wound and placed upon hot, sterile compresses; at the same time both the stomach and the large omentum are also brought up. It is not always easy to make the stomach prominent through the transverse mesocolon and for this reason it is a good aid to place the hand back of the mesocolon, push this forward and thus gain space for the stomach beyond it. (4) Incision of the mesocolon parallel with its vessels upon the prominence made by the stomach is often increased by the above maneuver. It is better in his experience to make this incision a little to the left, because on this side the lips of the peritoneal wound are a little more distinct, more easily spread apart and the stomach more easily drawn down. Further to the right it is usual to find various bands from the mesocolon adherent to the wall of the stomach. When the latter organ has been exposed through the wound it is well to seize it gently with two Hartmann clamps placed on the same horizontal line, one at the right and the other at the left, great care being taken, however, not to close them any more tightly than just enough to hold the stomach from slipping. (5) In order to fix the opening in the mesocolon upon the stomach, he does not make a line of sutures but only three or four, usually with silk, median

and lateral. (6) The loop of jejunum is now sought for and ordinarily readily found by passing the hand backward to the vertebral column a little to the left, where the bowel is found, coming slightly forward and to the left, apparently out of the posterior wall. The loop must be so arranged that this fixed portion to the left and posterior part of the operative field remains there, while the third portion passes to the right, making therefore the peristalsis of the stomach and bowel pass in the same direction, a most vital condition for the success of the operation. As a rule he leaves 12 to 15 cm. between the fixed point of the intestine and the point of anastomosis. (7) By suture the bowel and stomach are now united. After having carefully established protection of the abdominal cavity and of the two viscera with compresses, preferably by putting moist sterilized gauze between them, so that when they are open not the least fluid contents can escape, he unites with an ordinary needle and a long silk thread, sterilized, the posterior face of the stomach and the jejunum directly on the posterior aspect. He makes the suture line here concave inward from left to right. (8) The stomach is first opened. Its walls are much thicker and more vascular than those of the jejunum. (9) In front of the opening the suture line is passed. (10) A reinforcing line of sutures is often added. (11) A most careful toilet of the peritoneum is performed. (12) The abdomen is closed.

**Radical Cure of Inguinal Hernia.**—In the operation for the radical cure of hernia the most careful attention to asepsis is absolutely essential. It is an operation of great practical importance and it is now very frequently performed, but its success is not rarely endangered by the occurrence of slight suppuration; if, however, the suppuration be extensive the result will be a complete failure. This suppuration is in the majority of cases due to the use of silk or catgut as sutures. Silk is the better material of the two, for it is not absorbed and is more easy to sterilize than is catgut. In spite of very careful sterilization silk is nevertheless found to cause suppuration in a large percentage of cases. Suppuration sometimes occurs early, even within the first ten days after the operation; at other times it is postponed and a perfectly successful operation, in which primary union has been obtained, is followed by suppuration after the lapse of six or even seven months. In the first case there is at least some risk of failure and relapses are possible, and, since the patient's stay in bed is prolonged, he is apt to imagine that the surgeon is directly responsible for the mishap. The circumstance that suppuration may follow healing by primary union and may, in fact, not show itself until many months after a most successful result has been obtained proves that the suture material has either been imperfectly sterilized or that it possesses some property, chemical or physical, which is capable of exciting suppuration or of acting as a focus of infection conveyed through the blood. Relapses are the consequences of this defect and relapses sometimes occur even after healing by primary union without any remote suppuration. Many attempts have been made to find a substitute for silk. Silver wire has been suggested. It is inadvisable to leave wire in a wound and hence removable sutures have been devised, but these have found little favor because they are more difficult of application than is the ordinary suture and because if removed in ten or twelve days the support is withdrawn too soon, while if they are left in longer the duration of the treatment is correspondingly increased. In order that silver wire may be of sufficient strength, it must be thick and it is then open to the objection that in passing through Poupart's ligament it weakens that materially. It is for these reasons that TANSINI (Lancet, May 24, 1902) recommends the use of gold for suture, for this material can be drawn into wire not only finer than silk, but stronger and more flexible. With such a wire it is as easy to apply sutures as with silk and it cannot do harm as a foreign body. The suture is fixed by twisting the ends three times and this requires less time than tying a silk suture. Using this suture and the new instruments presently to be described, he has performed the radical operation for inguinal hernia in ten minutes. Thick wire for the deep sutures and thinner wire for the superficial sutures are the selection he prefers. For tying off the neck of the sac he uses the same wire as for the deep sutures and for suturing the sac, if necessary, the same wire as for the superficial sutures. The ends of the deep sutures are seized with dissecting-forceps and turned into the thickness of the internal oblique muscle. The ends of the superficial sutures, which are very thin, are left as they are. After many experiments with a view to finding the most ductile alloy and the smallest possible size of wire he has succeeded in getting what he desired through the firm of E. De Amici, of Via San Sepolcro, Milan. The cost of the wire may seem high, but in actual practice the result is an economy. The gold remaining in the patient's body weighs only 12 to 60 cg. (2 to 10 grains). The cut off ends of the wire can be remelted and used over again. The special instruments which he finds of service are a hook, a curved retractor and a spatula. The hook is reserved for the spermatic cord, which it retracts by its own weight. The blunt retractor is so arranged as to hold within its grasp the various muscle-layers which must be kept out of the way during the suturing. The spatula is put upon the floor of the wound to depress it and keep it away from the line of sutures as they are placed in position. The value of this series of instruments is that it is never necessary for any hands to touch the wound. These four, together with the gold sutures, he claims to be the source of still greater success than is usually the rule as the operation is commonly done.

**Infection by a Paracolon Bacillus.**—It would appear from a series of late researches that the group of bacilli intermediate to the typhoid and colon bacilli are destined to become of as much interest in surgical pathology as is the typhoid bacillus. In this connection an interesting case is reported by BERG and LIBMAN (Jour. Am. Med. Assoc., June 7, 1902). From the clinical history the diagnosis lay between empyema of the gall-bladder with cholangitis, abscess of the liver, and typhoid fever with cholecystitis. As regards the latter there was no roseola, no enlargement of the spleen, and no Widal reaction. An exploratory operation showed no lesions of gall-bladder or liver except slight thickening of the ducts. Pathological examination showed during life the presence of a paracolon bacillus in the blood, urine, and gall-bladder, and to this the systemic infection must have been due. The development of a Widal reaction late in the disease in dilution of 1 to 250 showed the presence also of typhoid. This was confirmed at autopsy by healed and healing ulcers in the ileum. The authors believe that the typhoid was of the ambulatory type to which the paracolon infection was secondary and had overgrown the original infection.

**Avulsion of the Scalp.**—As only thirteen cases of this character are recorded in medical literature, the addition of another with the results of treatment should prove of interest. W. T. BIVINGS (Phil. Med Jour., June 7, 1902) has had under treatment a girl of fourteen, who sustained a complete avulsion of the scalp together with the periosteum. The surface was thoroughly cleaned and dressings of aluminum acetate solution applied. Three skin-grafting operations were done after varying intervals, due to the onset of broncho-

pneumonia at one time and mumps at another. The methods employed were those of Thiersch, Krause, and Lusk, the skin being taken from the patient and two other individuals. The skin from the belly of a frog and the vitelline membrane of an egg were used without success. Healing was complete in about ten weeks. The following points are emphasized by the author: The benefit of shaving, thoroughly scrubbing and rendering the scalp wound as aseptic as possible at the first dressing. The superiority of the Thiersch method of skin-grafting over all other methods tried. Skin-grafts taken from the body of the patient grow far better than grafts from the skin of other people.

**Myelorrhaphy Followed by Return of Function.**—It is unrefuted that severed peripheral nerves may functionate after the ends have been approximated, but that regeneration of the central nervous system occurs is denied by practically all investigators. STEWART and HART (Phila. Med. Jour., June 7, 1902) submit a case, which they believe to be the first myelorrhaphy performed in man, as evidence of the power of the spinal axones to regenerate. The patient, a woman of twenty-six, was shot, one of the bullets entering the spinal canal at the seventh dorsal vertebra. There resulted complete abolition of motion and sensation below the level of the tenth dorsal spine. Three hours after the accident operation was done. An exposure by incision and dissection showed the right lamina of the seventh dorsal vertebra to be crushed in and the left lamina fractured at its base. Removing the spines and lamina of the seventh and eighth dorsal vertebræ showed the cord to be completely divided, the ends being separated three-quarters of an inch after the lacerated nervous tissue was cut away. The ends of the cord were then approximated with three chromic gut sutures, one passed anteroposteriorly and two transversely through the entire thickness of the cord. The dura could not be approximated. A small gauze drain was left in place for twenty-four hours. The muscles were united with catgut and the skin closed with silkwormgut. The condition after operation was excellent and the wound was healed by the seventh day. Sensation began to return in a few days and at the end of two weeks flexion of the foot was recognized as such and followed by powerful leg contraction. Deep pressure could be felt over limbs and abdomen. In three weeks urine in the bladder could be felt but not voided. Pin-pricks were felt as far as the umbilicus, but could not be localized. The patellar reflex returned. In two months the knees could be feebly flexed and by the fifth month the patient could slide out of bed into a chair without aid. During the seventh month the menses returned. By the eighth month she had good control over the bladder and bowels and was able to stand with support. General improvement continued and by the fourteenth month she could take a tub-bath, feel the water on the lower extremities and distinguish between the hot and the cold. Two months later flexion and extension of the toes, legs, and thighs could be done, with flexion stronger than extension. Sense of touch, temperature, pain, and position all over, and general health were excellent. The maxim of spinal surgery is, "no interference" when the cord is divided or crushed. The authors of this paper believe, however, that every case of this character should be thoroughly explored at once and not left until it is determined whether the symptoms are due to pressure or to concussion. Myelorrhaphy is especially indicated when the cord has been severed by a sharp instrument or a projectile.

**Hour-glass Stomach.**—A few years ago it used to be thought that the condition of hour-glass stomach was a great rarity, that its diagnosis was almost impossible, and that treatment could at best only palliate the misery entailed. Recently, however, since surgeons have been called upon to deal with obstinate gastric affections more frequently than before, there has been a complete reversal of these opinions. MOYNIHAN of Leeds (Edin. Med. Jour., June 19, 1902) states that within less than two years he has had under his care 14 patients suffering from hour-glass stomach; that in the last 8 of these, 6 were diagnosed with certainty; that treatment resulted in recovery in 10 of them, while death in at least 2 of the other 4 cases was due to conditions not induced by the operation. The anatomical condition varies markedly in the different cases, and is of great importance in its bearing upon treatment. The deformity may be due to constriction by external bands, or by adhesion to neighboring surfaces. Perigastric adhesions may be due to many causes—peritoneal irritation from gastric ulcer, old tuberculous peritonitis, old cholecystitis, etc. The most important causes, however, are those traceable to disease of the stomach itself, namely, ulcer and cancer. Chronic gastric ulcers are characterized by great thickening and induration of the base. In the healing of such ulcers, there is a considerable amount of cicatricial contraction, and a high degree of narrowing of the stomach may result. Spasm of the circular muscles, with hypertrophy and thickening, tends still further to reduce the aperture. Thickenings of this sort very often simulate cancer, even after the abdomen has been opened. The stenosis varies in caliber. It varies in extent from a ring-like constriction to a tube. It may indent the greater curvature, giving rise to the U-shaped stomach, or the lesser, causing the inverted "U." The tendency of ulcers to be multiple often gives rise to more than one stricture, a condition demanding a special mode of treatment. The symptoms of the condition will naturally vary with the site of the constriction: if this lie near the cardiac end, they will resemble those of esophageal obstruction low down; if it be near the pyloric orifice, the symptoms are those of dilated stomach. Under any circumstances, the diagnosis can almost always be made with certainty. The most important symptoms are furnished by lavage of the stomach and by its inflation with gas. If the tube be passed and the stomach washed out with a known quantity of fluid, it will be found that less is returned than has been put in. The stomach may be washed clean; then, after a short interval, several ounces of dirty, offensive fluid may be obtained. The stomach may be apparently emptied by the tube, and yet succussion is obtainable; the splash is due, of course, to the retained contents of the pyloric pouch. When the stomach is inflated, the hour-glass shape may be distinctly outlined externally; or a bulging to the right of the epigastrium may gradually pass over to the left; or this latter condition may be accompanied by a gushing sound, to be heard with the stethoscope; or there may be an enormous increase in the resonance of the upper part of the stomach, while the lower part remains unaltered. All these signs are simply sequelæ of the physical condition; two pouches connected by a narrow neck. The following operations are practised: gastroplasty, gastro-gastrostomy, gastro-enterostomy, partial gastrectomy, and jejunostomy. The indications suggest themselves. A narrow cicatrix demands a plastic; two pouches are treated either by anastomosis, or double gastro-enterostomy, or the latter with gastroplasty; new growths require removal or exclusion, and so forth. It will be seen that the article represents an enormous advance in our attitude toward this most serious disease.

**Subcutaneous Saline Injections.**—The introduction of normal saline solution into the circulation to counteract shock, to dilute and alter the composition of the blood, or to replace the loss from hemorrhage,

is a therapeutic measure of proved utility. Of the three methods of injection—intravenous, subcutaneous, and rectal—the subcutaneous is the most common and will probably always be the most favored. It is safer, simpler and of less elaborate technic than the intravenous, yet equally certain, and almost equally rapid; while it is more efficacious and more speedy than the rectal. GEORGE MAGUIRE (Jour. of Obstet. and Gyn., Brit. Empire, June, 1902) has devised an instrument for performing subcutaneous injection of salt solution, which is a trocar and cannula with a rubber attachment. The cannula is double channeled in its upper third.

**Resection of the Liver.**—Surgery of all the so-called parenchymatous organs like the liver has always been surrounded by the hazard of fatal hemorrhage. KOSLENKO (C'blatt f. Chir., 1902, No. 18) has been making experiments in this line, chiefly with the steam saw of Prof. Sneguirew, upon animals and offers the following results of his experiments. He has found that in the ordinary methods of resecting the liver by which steam is used several difficulties are encountered. First, the steam rushes out of the tube under its own pressure and therefore tears away more or less the already damaged surface of the organ; this is necessarily followed by a renewal of bleeding. Second, while the operation is going on, the presence of so great a volume of steam in the operating field is necessarily an obstruction to a good view of the work. The patient really loses more blood and oftentimes a special assistant is necessary to manage the same. Third, the volume of steam is so great that it is apt to damage other parts of the organ than that under operation. The saw of Prof. Sneguirew is so made that the steam is delivered at the point of the teeth and in quantity just sufficient to act as a hemostatic. It will be seen that this arrangement for delivery of the steam at once does away with the other difficulties. The other necessary details for successful work on the liver are given by Langenbuch in the following terms: The largest possible operation field is required, and often to attain this the ligaments of the liver must be cut through. In order to make the liver anemic the superior and inferior mesenteric arteries must be temporarily ligated. The exposed parts of the organ should be encircled by an Esmarch bandage. For the exposed surfaces of the wound it is necessary to have at hand all of the well-known means of checking hemorrhage, thermocautery, sutures, tampons, etc. The result of Koslenko's experiments upon dogs has taught him to regard this steam saw as an instrument by means of which the liver can be divided or resected without great danger of bleeding. If a very large blood-vessel be encountered, it may be controlled by special ligature or by directing against it a single stream of steam. He has had in these animals no secondary hemorrhage whatever, and the wounds of the liver healed well by granulation, after the secondary development of connective tissue. He therefore hopes that this saw will prove of inestimable value in surgical work on the liver of the human being.

**A Convenient Face Mask.**—There are surgeons who have adopted the conscience-satisfying methods introduced chiefly in Europe, which consist of rubber gloves, caps, masks and the like. It is difficult, however, to get these articles made so as to be comfortable. F. WENZEL (C'blatt f. Chir., 1902, No. 19) presents the following means of combining cap and mask so as to make both very comfortable. An ordinary piece of gauze is folded three times and cut so that it shall be about 80 cm. long and 50 cm. wide. In the gauze a space for the eyes is cut so that it shall be perhaps 30 cm. from one end. At the upper and lower margins of this eye-space ordinary tapes are stitched or pinned and are tied behind the head, keeping the eye-space and the whole covering in place and preventing ravelings from causing inconvenience. The corners of the gauze are then tied behind the head, loose or tight, according to the beard and other needs of the operator. The redundant part falls loosely to the neck and shoulders and this is covered up by putting on the gown after the mask and cap are in position. In this manner all loose ends which might get in the way are covered up and the whole is loose enough to give perfect freedom.

**Appendicitis.**—This protean disease is now so frequently diagnosticated that the public is beginning to think with perhaps excellent reason that, whatever the truth of the case may be, either the disease is increasing with uncommon rapidity or physicians and surgeons are overanxious to find it. It is well to bear in mind the great number of conditions in the abdominal cavity, especially below the level of the umbilicus, which may cause approximately the same symptoms and signs and thus deceive even the wary. A very complete list of these conditions, chiefly abscesses in the right iliac region and other lesions not of gynecological or appendiceal origin, which may be mistaken for appendicitis, is given by J. M. SPELLISSY (Annals of Surgery, June, 1902). His list is moreover illustrated by a number of very interesting cases. It is impossible, however, to do more than give the list, which can be pasted into the text-book of every reader under the heading of appendicitis. (1) Bones and joints: Vertebræ, sacrum and ilium, femur, especially tuberculous osteitis. (2) Muscles: Iliacus, psoas, external and internal oblique, and abdominal, chiefly myostitis. (3) Nerves: Iliohypogastric and inguinal, lumbo-abdominal by neuralgia, sympathetic by neuralgia, pneumonia and pleurisy, and the general nervous system by hysteria. (4) Glands: Chiefly in the form of adenitis, may affect the prececal, retrocolic, retroperitoneal, abdominal (especially syphilis), and tonsillitis. (5) Peritoneum: General as a serositis, omental as a true peritonitis, or tuberculous as a peritonitis. (6) Vestiges and diverticula: Vitelline-intestinal and intestinal-funicular by infection and abscess, Meckel's by obstruction. (7) Colon: Impaction perforation following impaction or from foreign body, malignant disease, especially carcinoma. (8) Cecum: Foreign body (orange pulp), enteroliths, intussusception, especially ileocolonic, perforative ulceration, perforative malignant disease, tumors (fibromyoma, carcinoma, sarcoma). (9) Ileum: Foreign body, chronic lead poisoning, acute inflammation with localized peritonitis, chronic inflammation with adhesions, perforation, typhoidal ulceration of Peyer's patches, malignant disease (soft sarcoma, and lymphosarcoma). (10) Duodenum: Perforative ulceration. (11) Stomach: Perforative ulceration, gangrenous polyp. (12) Abdominal cavity: Foreign body, like ligature. (13) Hernia: Properitoneal (Littré's) or into the fossa of Treves. (14) Spleen: Inflammation. (15) Pancreas: Inflammation. (16) Kidney: Floating kidney, hydronephrosis, pyonephrosis, perinephritic abscess. (17) Urethra: Abscess, gonorrheal inflammation, calculus. (18) Prostate: Gonorrheal inflammation, acute epididymitis. (19) Liver: Subhepatic abscess. (20) Gall-bladder and ducts: Dilatation, rupture, cholecystitis, empyema, cholelithiasis with or without dropsy, cystitis or empyema, abdominal abcess following empyema of the gall-bladder, gall-stones in and obstructing the intestines. This is veritably a formidable list, but will serve to illustrate how exceedingly careful one must be in deciding between any one, especially the more common, of these conditions and appendiceal difficulty.

**Kidney Complications after Furuncles.**—In a discussion on furuncles of the skin, A. CAHN (Münch. med. Woch., May 13, 1902) states that in case of ob-

scure temperatures appearing after they have been opened, the kidney regions should be carefully examined, as he has met with four cases in which paranephritis or pyonephrosis developed. Palpation of the right side with the patient on his back and of the left side with the patient in the diagonal position with flexed neck and body and drawn-up thighs may lead to the discovery of a distinct resistance; the urine may be normal or be that of an acute parenchymatous nephritis. In general the cocci from furuncle are carried by the lymphatics; it is only rarely, with their superficial site, that they get into the veins to be carried to other parts of the body. But that this is possible is explained by the occurrence of osteomyelitis, synovitis and the kidney-complications just described.

**Perforating Ulcer of Foot.**—It is well known that ulcers on the feet resemble each other as to seat, development, form and course irrespective of etiology. They are generally found where most pressure is exerted and a hyperkeratosis precedes them which in time exerts more pressure and thus leads to a *circulus vitiosus*. It would therefore seem that at the bottom of the trouble there is a diminished sensibility which prevents the patient from noticing the offending shoe, etc. That this is not the case, however, is clear from the article of E. TOMASCZEWSKI (Münch. med., Woch., May 13 and 20, 1902), who says there are many cases in which sensibility is intact or in which no trauma is exerted on the feet. He is inclined to believe that an isolated sclerosis of the plantar arteries plays an important part, since there is frequently an absence of pulsation and but little bleeding occurs during operation. Then, again, ulcers are rarely situated on the heel, for, unlike the more anterior parts of the foot, this is supplied by vessels of large caliber. Arteriosclerosis is also a common lesion in diabetes, syphilis and nervous disturbances and frequently is most developed in the parts furthest away from the heart. Whether any trophoneurotic disturbances are also at work is not clear, since the existence of trophic nerve and centers is still unsettled, though degeneration in the nerves supplying the affected parts has been demonstrated; these also occur in cachectic individuals without ulcers and in artificially induced ulcers. The proper course to determine the cause of a perforating ulcer is to feel the anterior and posterior tibial pulses and to examine the urine for sugar; if both procedures prove negative, to take a complete nerve status, for the ulcer may well be the first subjective manifestation of a cerebral, spinal or peripheral disease.

**Operation for Rectovaginal Fistulæ.**—It frequently happens that the ordinary operations for closing rectovaginal fistulæ are unsuccessful and leave larger openings that those which previously existed. More than two years ago H. N. VINEBERG (Med. Rec., June 7, 1902) was confronted with one of these cases which resisted ordinary methods of operation. He conceived the idea of excising the mucous membrane of the rectum from the skin up to the fistulous opening, and then by freeing the mucous membrane above this point from the subcutaneous tissue he brought the edge down and sutured it to the skin. This is, of course, similar to the Whitehead operation for hemorrhoids and can be used even when the rectal opening is two or three inches above the anus, provided the mucous membrane is properly freed. He has since learned that a similar operation was performed by a French surgeon in 1895.

**Gunshot Wounds of Stomach.**—It is estimated that in gunshot wounds of the abdomen the death-rate is nearly 90 per cent. In this age of aseptic surgery such a condition should in no way be satisfactory to the medical profession. P. F. EVE (N. Y. Med. Jour., June 7, 1902) urges the necessity for immediate operation in all cases in which a penetrating wound of the abdomen exists, provided anything like aseptic surroundings can be obtained. In the recent wars it was shown that when a small-caliber, long-range rifle is employed the wound is so slight that the indications for operative measures are less imperative, especially in cases in which the wound has been received after a long period of fasting. The palliative treatment consists in absolute rest, the smallest if any quantity of fluid being taken into the stomach, the use of opiates to relieve the pain and remedies for counteracting shock. If the wound has been so small that there is very little or no leakage from the gastro-intestinal tract only local peritonitis results and the pressure of the bullet seldom gives any symptoms. The chances of a secondary general peritonitis are so great, however, that whenever a surgeon can be reasonably sure of his asepsis it is much better to explore even small penetrating wounds. A wound of the stomach almost always means that there is a perforation in more than one place, and a most diligent search should be made for openings in the posterior wall. After closing the wounds the peritoneal cavity should be thoroughly washed out, preferably with normal saline solution, even though the wound in the stomach wall be small and the contents of the stomach have not apparently exuded.

## GENITO-URINARY AND SKIN DISEASES.

**Winkelmann's Hydrocele Operation.**—The following technical observations are offered concerning Winkelmann's hydrocele operation and its final result by W. MINTZ (C'blatt f. Gynaek., 1902, No. 20). They concur with similar findings by Lauenstein and Gückel in regard to relapses after it. They showed a new collection of fluid between the tunica propria and communis, which had not become adherent. This is a result which need not cause surprise when one considers carefully the original method described by Winkelmann in 1898, which consisted primarily of carefully crumpling up the tunica propria and forcing this into the tunica communis, disposed as a sac to receive it. In four cases which Mintz has operated on he has not shelled the hydrocele as a sac out of the tunica communis, but has taken the two together and divided the various layers and then, after bringing the testicle forward, has folded these backward and sutured them. In this way the secreting surface of the tunica propria is turned outward and faces the dry connective tissue, which fills out the pocket in which the testicle hangs and therefore has a greater tendency to absorb whatever fluid may be secreted by the tunica propria. In this very process of resorption, which in the original operation of Winkelmann was trusted entirely to the tunica vaginalis communis, there lies, according to Lauenstein, the greatest difficulty of this method, due to the failure to obliterate the spaces. In order to save the patient from the difficulties of leaving silk sutures behind, which tend to hinder the backward fold of these tissues, Mintz has hit upon a method of autorrhaphy. The silk sutures are replaced by strips of tissue which are gained by snipping along the edge of the incision in these tissues until a little strip is cut of sufficient length to permit of tying. At the point of desired suture two such strips are cut with their bases near each other. Then one of them is carried through the posterior margin of the wound and the two are tied. In this way the necessity for permanent suture is avoided.

**Mixed Treatment.**—One of the deceptive inconveniences which affect the subcutaneous or intramuscular injections of the insoluble salts of mercury consists, as is well known, in the production of small nodosities which often enough become involved and finally end in an abscess of size sufficient to warrant incision and

drainage or which rarely opens of itself. As a rule these purulent collections are attributed to defective technic and notably to a fault in asepsis, but R. DUHOT of Brussels (La sem. méd., 1902, No. 20) has been able to prove that the accident in question may be simply due to the employment of iodide of potash and an insoluble salt of mercury, such as calomel, combined. This follows from the formation of the biniodide of mercury, a caustic salt which results from this association of the two substances in the body at the same point. He has had occasion to treat a syphilitic man, 27 years of age, who had already borne very well treatment by injections of calomel. Upon this man he instituted the newer method, called the associated injection, which combines the use of iodide of potash in a dose of two grams with mercury. The first four injections produced no abnormal result, but as soon as the iodide was increased to three grams the patient began to complain of violent pain at the point of the fifth injection of calomel. The following day he saw at this site a node the size of a pigeon egg, which ruptured spontaneously the following day and discharged a thick liquid of a reddish-brown color, containing large quantities of decomposed blood elements, especially a large number of red blood cells. The fluid was completely sterile, as proved by inoculations upon agar and blood serum. The sixth injection was followed by the same accidents. He then stopped giving the iodide and was able to continue the injections of the calomel without causing the least complication. He therefore concluded that in this patient the aseptic abscesses were due to a chemical reaction within the body. This observation agrees very well with similar results which followed the experimental researches instituted by F. Lesser and A. Neisser. The former of these two observers has proved that in a rabbit in whose blood alkaline iodides were made to circulate one could introduce into the stomach by means of an esophageal sound a mass of calomel, and then after twenty-four hours kill the animal and find at the autopsy numerous ulcerations in the mucous membrane of the stomach. He therefore thinks that before prescribing any calomel it is well to assure one's self that the patient has not been taking recently any preparation of iodine. In a case of doubt it is well to examine the saliva for iodides by adding to it a little calomel. If the latter salt take on a yellow color, due to the formation of iodide of mercury, it is because the saliva contains alkaline iodides. Moreover Lesser and Duhot think that in grave cases of cerebral syphilis or of visceral syphilis, when great danger threatens the patient, it is better to combine the mixed treatment irrespective of these accidents which may be expected in rare cases. As a rule, when the symptoms of the syphilis are not extremely marked and other general circumstances permit, it is perhaps better to employ the iodide of potash and the mercury separately, especially if calomel be the salt of mercury selected.

**Prostatic Hypertrophy.**—Even the best authorities of to-day differ widely in regard to the best method of operating upon a hypertrophied prostate, but undoubtedly the operation should be modified to suit the individual case. The suprapubic method affords the best view of the field of operation and is much better when the enlargement is great, but it is probably attended by a greater mortality. C. E. CHETWOOD (N. Y. Med. Jour., May 31, 1902) favors the perineal route in most cases and has modified the ordinary incision or enucleating operation by the use of the galvano-cautery. A perineal section is first done and a digital examination made. The character of the hypertrophy is determined and then a specially-devised cautery knife with concealed blades is introduced and, according to the case, one median or one or two lateral incisions are made. The bleeding is usually very slight and recovery rapid. The results thus far have been very satisfactory. The author believes that there will be a tendency toward earlier operation in this condition, as soon as the mortality can be reasonably reduced, for the complications from unnecessary delay are very serious.

**Lupus Erythematosus of the Nose.**—A young woman with negative family history and previous history had a skin lesion of four months' standing when seen by H. S. PURDON (Dublin Jour. Med. Sciences, June, 1902). There were three small patches of the characteristic dusky or reddish color close to the right nostril. The edges were clearly defined and surrounding them was a well-marked, distinct elevated ridge of pale color which was both visible and palpable. The sebaceous follicles of the nose were plugged up. The affected surface felt rough. Under the use of a salicylic acid preparation and painting with a solution of ethylate of sodium, the disease is improving and the ringed ridge is disappearing.

**Use of the Cautery on the Prostate.**—In presenting a new method of using the cautery, W. N. WISHARD (Jour. Cut. and G.-U. Dis., June, 1902) is of the opinion that cauterization of the prostate should always be done with the operative area under direct observation and that preliminary opportunity for digital examination of the prostatic urethra, vesical orificé and bladder should be given and that after operation bladder drainage should be secured. The writer's special instrument for the application of the cautery through a perineal opening consists of a form of endoscopic tube bent at the end, with electric light illumination. The cautery wire works through a groove near the end and being adjustable can be made into any length. There is also provision made for inflating the bladder with air. Four cases with prolonged prostatic obstruction were thus operated upon under local anesthesia—Schleich's infiltration method—with good results.

## NEUROLOGY AND PSYCHIATRY.

**Senile Tabes.**—Tabes is most common between the ages of twenty-five and forty-five, writes A. PITRES (Jour. de méd. de Bordeaux, May 18, 1902), yet 25 per cent of the cases observed by the author occurred after the fiftieth year. Three cases are reported which began after the seventieth year, the patients having up to that time enjoyed good health, with the exception of one, in whom tabetic symptoms followed an attack of influenza. In the experience of the writer, the symptomatology of senile tabes is practically identical with that observed in earlier life, save that the onset is generally rapid and not characterized by a pre-ataxic stage. Autopsy in two of the cases referred to showed marked atheroma of the peripheral and large spinal arteries, atrophy of the posterior roots and sclerosis of the posterior columns being noted as in ordinary tabes. From these studies it is concluded that senile tabes is less closely related to syphilis than tabes of earlier life, that it is indirectly attributable to any cause, acute or chronic, which induces degenerative changes in the arterial system (senility, alcoholism, infectious diseases), and that it probably constitutes a manifestation of spinal arteriosclerosis rather than an effect of luetic infection of the nervous center.

**Rest in Bed and Epileptic Delirium.**—Various clinicians are still disputing about the value of treating delirium due to epilepsy by rest in bed. This delirium is particularly obstinate and is one of the conditions which come under the care of the general practitioner often. It is therefore wise to give the results which have followed this method of treatment in the hands of the eminent author, E. MARANDON (La sem.

méd., 1902, No. 21). Of 19 epileptics with delirium which he has treated in this way only one obtained incontestable advantage from it. Under the influence of the rest in bed the crises, which before had lasted five days and consisted chiefly in a mania with hallucinations of sight and hearing, refusal of food, complete insomnia, etc., became shorter, from five to three days, and less severe. When the third seizure appeared after the beginning of the treatment the fit remained purely one of motor elements. The patient fed well and could sleep fairly comfortably during the night. After this the crises of delirium were not again in evidence. In four other cases the results of rest in bed were much less favorable. The crisis itself lasted longer but was really less active and the amelioration was not especially constant. In ten patients among whom three had been the victims of crises of delirium this method of management remained absolutely useless. In still four others rest in bed appeared to aggravate the situation. Basing his views upon these patients, this author has adopted the following line of treatment. He does not prescribe rest in bed until he has observed the duration, intensity and general symptoms which accompany the first active crises of delirium. After he has in this way made a comparison in order to estimate the probable result of rest in bed, if he thinks it will give no results, he does not hesitate to refuse to employ it and substitute in its stead mere isolation and quiet, which to the majority of patients is a vastly more agreeable and acceptable situation than being kept in bed.

**Toe Reflex.**—The Babinski toe-reflex, a dorsal flexion of the big toe after irritation of the plantar surface of the foot, which is supposed to indicate a lesion in the pyramidal tracts, has been tested in a large number of cases by H. LEVI (Münch. med. Woch., May 27, 1902) and found to be not entirely reliable. In 6 per cent. of the cases in which disease of the pyramidal tracts could be definitely excluded, the reaction proved positive and of the remaining 94 per cent. only 86 per cent. gave a distinct, primary plantar flexion. In functional diseases there always was plantar flexion, but there is a certain number of cases reported in which a Babinski-reflex was present. In paralysis agitans, Huntington's chorea and epilepsy, the phenomenon never occurred. In two cases of recent hemiplegia, the reaction was present but disappeared in a few days, while the paralysis improved to a paresis, though this certainly was not of a functional nature. That increased knee-jerks in general paresis do not always signify pyramidal destruction seems probable from the frequency with which no Babinski-reflex could be obtained; conversely, quite a few cases come under observation in which a Babinski-reflex and absence of knee-jerk went together.

**Basedow's Disease.**—There are two dominating theories in regard to the cause of this disease, the neuropathic and the glandular. There is a strong tendency at the present time to consider it as a glandular disorder dependent upon the hypersecretion of the thyroid gland. C. L. DANA (N. Y. Med. Jour., June 14, 1902) believes that the primary disturbance of the disease is in the cerebral centers, and particularly those which control the nutrition of the thyroid and regulate the action of the circulation. These centers are constitutionally weak, as shown by the almost uniform neuropathic personal and family history, and they are further weakened through emotional strain and infections. This disease frequently follows fevers, sepsis, operative procedures and pregnancy. Typhoid fever seems to be followed by exophthalmic goiter more often, perhaps, than do the other infectious fevers. He reports two cases of rather acute course in which autopsies disclosed pathological changes in the nerve cells of the pons and of the medulla, and he believes that in well-marked cases these changes in the nuclei of the pneumogastric and other nerves are constant and important lesions.

**Focal Facial Epilepsy.**—The subject of focal epilepsy is of so much importance in diagnosis that contributions to this subject must in the present state of knowledge of cerebral localization be of considerable value. MCCARTHY and FRANCINE (Phil. Med. Jour., June 14, 1902) report a case of focal epilepsy occurring in an old woman, affecting the right side of the face and tongue, and followed by a paralysis of the same lasting from three to five minutes. This paralysis following a localized convulsion makes the case interesting. The differential diagnosis of an organic brain lesion from hysteria had to be considered. The history showed that the first attack of convulsive movements followed an accidental scalp wound by a hatpin, but, although this may have been hysterical, it is believed that reflex epilepsy may have been caused by an intense pain. The unique distribution of the paralysis in this case leads the authors to believe that there is a small lesion of gradual development localized in the left motor area in or near the face center, that it is not sufficiently developed to cause serious disturbance of function of the motor cells for the face and tongue, but by irritation leads to paroxysmal convulsions followed by paralysis.

**The Lacrimal Reflex.**—By this term is meant the secretion of tears produced reflexly by irritation. The preservation of the lacrimal reflex in hysterical anesthesia of the conjunctiva has been noted by a number of observers, but W. G. SPILLER (Phil. Med. Jour., May 17, 1902) suggests that in a case of anesthesia in the distribution of the trigeminal nerve, with implication of the conjunctiva and nasal mucous membrane, the lacrimal reflex should be much diminished and that in this diminution there might be a sign of importance in diagnosticating between organic and hysterical anesthesia. Irritation of the nostril seemed to be the most satisfactory way of testing this reflex. Cases in which the Gasserian ganglion had been removed and in which anesthesia had existed a long time in consequence should prove the most favorable for the test. The author has examined two such cases and found the lacrimal reflex considerably diminished in the anesthetic eye. Further observation will determine the value of this reflex in differentiating between organic and hysterical anesthesias of the face.

**Methylene Blue and Insanity.**—It is easy to recall the results obtained by P. Bodoni in studying by means of injections of methylene blue the permeability of the kidneys in the insane. He found that in certain cases these injections exercised a calming effect in the presence of mental excitation and mania. Furthermore D. E. HUGHES and E. LOVELACE (La sem. méd., 1902, No. 17) have recently experimented with the same drug on twenty-two patients afflicted with various forms of psychosis accompanied by excitement. The medicine was administered in part by mouth, in part by injection beneath the skin in doses of 0.006 gram repeated, if necessary, several times during the day. The sedative effects were not as constant as were those noted by Bodoni. Among the 22 cases 6 were not at all benefited by it, while the other 16 were very much calmed at the end of three or four hours and remained so for from fifteen to twenty hours. Methylene blue produces a sedative effect upon the majority of psychoses. On one occasion only has it been noted that a light degree of depression occurred. The medicine is almost always well borne, although its use has been in some cases continued for a month or more. In one instance it has been seen to provoke vertigo. It is well to note that the in-

jections may cause an abscess. For this reason it is best to boil the methylene blue, because the product often contains microbes.

**Pathology of Amaurotic Family Idiocy.**—The case studied by K. SCHAFFER (Wien. klin. Rundsch., Apr. 20, 1902) was a girl, sixteen months old, of Jewish parentage, whose birth was normal. When she was ten months old the extremities became rigid and a well-marked apathy developed. The presence of a cerebral diplegia could be determined, with contracture of the flexors of the upper extremity. The ophthalmoscope showed the typical picture: Both papillæ were normal, but in the region of the macula there was a bluish-gray spot, the size of two optic disks in diameter, with indefinite margins and a red center. The family history was negative and all brothers and sisters were healthy. Death occurred in a few days; an autopsy was performed, the brain and spinal cord being carefully examined. Macroscopically, no abnormalities were evident, but Weigert's stain revealed extensive degeneration in the cortex of the cerebrum and in the lateral pyramidal tracts of the cord and only the ascending spinal, bulbar and cerebellar tracts approached normal.

## MEDICINE.

**Guaiacol and Tuberculosis.**—After having been in vogue for a certain length of time large external doses of guaiacol recommended several years ago as a means of combating fever, especially in phthisis by Sciolla and Maragliano, have gradually fallen into disuse. The cause of this has chiefly been alarming symptoms in the form of excessive fever and collapse to which they too frequently gave cause, but according to the observations of N. LAVROV (La sem. méd., 1902, No. 20) these unfavorable results are due only to large doses more or less in excess of the amount habitually employed for cutaneous application and may usually be easily avoided by following a procedure like the following: For each application 0.50 to 2 grams as a maximum of guaiacol are taken and placed upon a region the dimensions of which must not be less than 30 or 40 sq. cm. Then it is well to cover the part thus treated with glass of sufficient size and fixed to the skin by bits of adhesive plaster. Under this hermetically closed dressing the guaiacol is readily absorbed, usually within six or twelve hours, according to the quantity of the medicament taken. If these applications be carried out once a day in phthisical patients more or less favorable influence will be the result upon the fever, the cough, the night-sweats, sleep, appetite, and also upon the catarrhal phenomena in the lungs. As a rule these applications do not cause any local irritation, at least such are not appreciable. Occasionally it is possible to get a slight degree of redness of the skin which will not fail to disappear under inunctions of oxide-of-zinc ointment.

**X-rays in Medical Diagnosis.**—The utility of X-rays for medical diagnosis is clearly set forth by W. S. HAUGHTON (Dublin Jour. Med. Sciences, June, 1902) after examining over 1900 medical cases. In pulmonary tuberculosis two constant signs are opacity, depending on the extent and density of the consolidation, and restricted movement of the diaphragm on the affected side depending on the loss of elasticity of the lung tissue. When delicate differences in shadow have to be estimated, as happens in very early cases of lung trouble, the fluoroscope is best, as one can graduate the X-ray light when using the fluoroscope and see what cannot be shown by photographs. For heart and diaphragm the lamp is best about two feet from the screen. Note first the heart and diaphragm in quiet breathing, then in forced expiration and inspiration, and finally scrutinize the relative transparency of all parts of the two lungs. The positions can be marked on tracing paper, on which also the episternal notch, ensiform and nipples are located, or a large sheet of celluloid may be used for tracing. X-rays in tuberculosis of the lungs have been most useful in cases with little or no physical signs, in those with complications, such as bronchitis or emphysema which mask the tuberculosis, and to test lungs when a known tuberculous focus exists elsewhere. In pneumonia the signs are dense opacity of part or whole of lobe, restriction of diaphragm on affected side or sides, displacement of heart away from affected side, accompanied by dilatation. For a considerable time after the crisis, the affected lobe is somewhat opaque and the diaphragm's movements are impeded. Pleurisy also leaves signs of restricted movement. In pleurisy with effusion, the contour of the diaphragm is partly or wholly obscured, the heart shadow is displaced away from the fluid, and the lung is more opaque, owing to compression. In an encysted pleurisy the shadow is stationary, no matter what be the position of the patient. Interlobular effusion is readily recognized. In pneumothorax the pleural space filled with air is brighter than the normal side. Also in emphysema the lung is brighter. Intrathoracic tumors, malignant growths of lung, pleura, or mediastinal glands, bronchial tuberculous glands, and some cases of esophageal cancer are visible. Aneurism of the aorta shows larger than it can be percussed, as does also dilated heart. Dilatation of an auricle can be distinguished from that of a ventricle. Dilatation of the esophagus at certain levels and the shape of a distended stomach may be observed after a large dose of bismuth subnitrate.

**Carcinoma and Skin Changes.**—In the Deutsche medicinische Wochenschrift, 1900, No. 30, E. HOLLÄNDER published a paper entitled "Contributions to the Early Diagnosis of Intestinal Cancer (Hereditary Taints and Changes in the Skin)," stating that these two elements often give premonitory signs of the growth, even when that is not palpable. These early pathognomonic skin changes are of value not only in intestinal but also in other internal cancers. Chief among them he considered the small angiomata which he describes as multiple, bright-red, pin-head to pea-size, prominent above and within healthy skin-zones, and usually isolated. They are a transition between small subcutaneous capillary hemorrhages and small aneurisms (capillary aneurisms), but differ from these in that pressure with the fingers or under a piece of glass does not readily blanch them. Only pronounced effort will do this. Whether or not such cutaneous manifestations can rise in perfect health during the atrophic changes of advancing life is of course a question still open for settlement. He has found them in well-nourished patients and in the ordinarily fattest parts of the body, but with a constancy and quantity in the presence of cancer to be certainly significant. These principles he has meanwhile been attempting to verify and gives the following report (C'blatt f. Chir., 1902, No. 17): Leser has been working in the same field and recently published a report of his results in the Münchener med. Wochenschrift, 1901, No. 51, but omitted to make note of any of the other early symptoms except the angioma described by Holländer. These other two symptoms are the development of small rootlets and of pigmentations. It is in point of these three symptoms in fact that the premonitory significance of cancer consists. So far as the establishment of rootlets is concerned it is well known that they often occur among patients operated on for cancer. This dissemination of many flat rootlets and roots which appear at first like unhealthy conditions are in reality only pigmented enlargements of the sebaceous glands. Even

these appear often enough among healthy patients in late life, but when their presence is manifest in youth and cannot otherwise be explained it certainly suggests an epithelial neoplasm. It is also known that these seborrheal rootlets may themselves give a tendency toward the development of cancer. The third symptom is pigmentation, which really appears rather constantly in the course of a cancer even when this is in the intestinal tract. The phenomenon seems to depend upon the intensity and extent and consists of flat pigmentations which may extend over large areas of the body. Although a single spot may closely resemble an ordinary freckle it is distinguished from it by its tendency to spread and to invade chiefly the parts of the body ordinarily covered by clothing from which freckles, it is well known, are almost always absent. The shade of color is also dark and the outline of the patch is more irregular than with freckles. Such are often seen in the neighborhood of a cancer, for example, about the gluteal region in cancer of the rectum. If these pigmentations are present Holländer thinks that they almost always indicate a cancer and are really more important than the other two symptoms. It is now two years since he called attention to these two facts and in that interval he has had abundant opportunity to verify his first claims.

**Pleurisy with Effusion.**—The treatment of this really common medical condition ought not to be a matter of the slightest dispute and probably would not be if it were not for the elements of doubt in the all important question of recognizing the cause and making treatment reach both the cause and the disease when possible. G. R. MURRAY (Lancet, May 24, 1902) says that all cases of acute pleurisy with effusion require rest in bed for limiting the inflammation as far as possible; hot applications of linseed or linseed and mustard poultices, belladonna fomentations, etc., for pain; strapping of the affected side for limiting respiratory movements and thereby decreasing discomfort; leeches, now often discarded, but really useful for decreasing local congestion. When exudation appears the surfaces of the pleura separate and the pain decreases. As soon as this occurs it is important to give a saline aperient like magnesium sulphate or sodium sulphate in large doses each morning for a number of mornings. Sodium salicylate, 20 grains three times a day, is often valuable and it has been found in large quantity in the effusion itself on chemical examination. After the acute part of the attack is over at the end of the first seven or ten days iodine is of service in aiding the absorption of the fluid by the lymphatics—tincture of iodine in 5-drop doses, iodide of potash in 5 to 10-grain doses, iodoform in half from ½- to 1-grain doses. Oleate of mercury (10 per cent.) may be rubbed into the affected side each day. Hays' method of restricting the patient to half a pint of fluid in twenty-four hours while from one-half to one and a half ounces of salts in concentrated form are given each morning an hour before breakfast is highly recommended by Osler. The question of aspiration is very important. Under certain conditions it should be done without delay. In all large effusions at any stage with dulness all over one side of the back of the chest and up to the clavicle in front, aspiration should be done at once. It should never really be deferred so long, as it is better to remove some of the fluid as soon as dulness extends above the level of the fourth rib in the nipple line in front. In these large effusions delay is dangerous as sudden death sometimes occurs. Physical signs, however, do not always indicate the amount of fluid which is present, so that in cases in which the area of dulness is less than that just indicated immediate aspiration is required if there be marked dyspnea on slight exertion, cyanosis, palpitation, irregularity in the pulse or signs of edema in the opposite lung. In cases in which the effusion is moderate in amount and produces no urgent symptoms there is no necessity for removing it during the first week or ten days. A moderate effusion is probably useful in the early stages of an acute attack of pleurisy, as it separates the two layers of the pleura, allows the lung to retract and lessens respiratory movements. As a result of this the inflamed membrane is kept at rest as much as possible and the two surfaces are prevented from rubbing against each other and the pleura is placed under conditions which are favorable to recovery. If aspiration is carried out at this early stage, these favorable conditions are simply removed and the object is not accomplished because the fluid is apt to return. If after ten days there be no diminution in the effusion, recovery will be hastened by aspiration; if, on the other hand, absorption has already begun it is usually not required. After aspiration the patient should remain in bed for at least two or three days, and after that he may get up as soon as his general and local condition will allow. The after-treatment of a case of pleurisy with effusion is of great importance and is practically the same whether the fluid has been absorbed or removed by aspiration. The great object is to complete a re-expansion of the lung. Various forms of blowing machines and gymnastics, all of which are well known to the profession, have beeen devised and under proper use most of them are serviceable. That form must be selected which seems best suited to the patient's means and physical strength. As a rule frequently repeated gymnastics, in themselves comparatively light, are better than those which are less frequently used and in themselves comparatively severe.

**Early Stages of Hepatic Cirrhosis.**—There are a relatively large number of patients in whom a palpable, usually tender and enlarged liver can be demonstrated and whose symptoms are either those of neurasthenia, myalgia, mononeuritis, or most frequently, a gastro-intestinal disturbance. BILLINGS (Jour. Am. Med. Assoc., June 7, 1902) finds that such conditions are usually found in the early stages of hepatic cirrhosis and that they disappear when the liver is restored to its normal size, consistence and sensation to touch. He presents a series of cases as probable ones of the primary stage of cirrhosis because the liver was palpable, enlarged and tender, there were no other causes of enlargement, and no evidences of portal obstruction. Out of 54 patients, 20 per cent. denied the use of alcohol; the remainder drank varying amounts. No other causes could be elicited. The majority were troubled with some disturbance of the digestive tract probably due to a catarrhal gastritis. In others were noted fermentative dyspepsia, muscular pains, neuritis, chronic bronchitis and pharyngitis, mild chronic diffuse nephritis, glycosuria. The author believes such symptoms are due to auto-intoxication as a result of an anatomical change in the liver structure and the latter would also intensify the toxemia of constipation and digestive disturbances. The improvement of symptoms coincident with changes in the liver was always striking. The treatment consisted of dieting, habits, hygiene, medication. The diet should be free from heavy meats, rich mixtures, greases, sweets, and little fluid should be taken with the meals. Alcohol is prohibited. Water is allowed on rising and three hours after meals. Plenty of out-door exercise should be taken. The bowels should be kept open with saline in hot water. Mistura R. & S. with tr. nux vomica or hydrochloric acid may also be given. Many cases are benefited by muriate of ammonia, in 10-grain doses.

**Blood-count in Variola and Varicella.**—The analysis of the results of numerous observations showed to E. WEILL and A. DECOS (Jour. de Physiol. et de Pathol. Gén., May 15, 1902) that varicella does not present any profound modifications in the cellular elements of the blood, differing in this respect from variola. In the latter disease the blood has the following features: The red blood-cells are diminished in number and nucleated red-blood cells are almost always to be found. There is a constant hyperleucocytosis. The polymorphonuclear leucocytes are diminished in number and the mononuclear leucocytes are increased. There is an augmentation in the number of the large mononuclear leucocytes with pale nucleus. Myelocytes are always present, and in a marked proportion. In contrast to the distinct changes in the blood of variola, the blood of varicella shows the following characteristics: The number of red blood-cells is normal and there are no nucleated red blood-cells. There is little or no leucocytosis. The polymorphonuclear leucocytes are normal or slightly increased, while the mononuclear variety are normal or slightly diminished. The large mononuclear leucocytes with pale nuclei are normal or even diminished in number. Myelocytes are absent. The authors conclude from the above observations that the blood-count in varicella differs markedly from that in variola, and that the examination of the blood is of eminent value in the diagnosis of these two affections, particularly when very difficult in the beginning of the disease.

**Enteroptosis and Its Costal Signs.**—The presence of a movable tenth rib was advanced some years ago as a pathological sign of certain congenital stigmata attendant upon well-marked neurasthenic and anatomical conditions. This theory has not met with universal belief but its author, STILLER of Budapest (Deut. med. Woch., May 29, 1902) has lately refuted many of the arguments of his critics and from his further studies advances the following conclusions: He believes that this sign is of great value in differentiating organic from functional dyspepsias. It is also a certain sign of neurasthenia, especially of the dyspeptic variety, and stamps it as a congenital affair. To the gynecologist it affords a means of differentiating a mechanical ptosis due to relaxed abdominal parietes from a congenital enteroptosis, and shows that uterine deviations are merely part of a general disorder, which in itself causes the manifold nervous and dyspeptic symptoms usually ascribed to the displacement of the womb. The author also considers this sign of prophylactic moment to the pediatrist, who may thus recognize the prospective neurasthenic and by proper management assure a better prognosis for the future.

**The Significance of Splashing-sounds in the Stomach.**—A number of recent writers have expressed the opinion that splashing-sounds produced in the stomach are of real diagnostic worth. Stiller regards such sounds as definitely pointing to gastric atony, no matter what other symptoms are present or absent; Kuttner interprets such sounds, if heard during the normal digestion period, as indicative of atony, and if heard long after eating, as evidence of motor insufficiency. H. ELSNER (Berlin klin Woch., June 2, 1902) disagrees with both these authors, and also criticizes the view of Schüle, who ascribes stomach-splashing to neurasthenia. Selecting 26 women with perfectly normal digestion, Elsner undertook to ascertain whether loud splashing sounds could be elicited (1) with a small quantity of fluid present in the stomach, and (2) several hours after the ingestion of food. In 10 cases out of 26 positive results were obtained. Elsner now declares (1) that splashing sounds are not a pathological symptom, and (2) that Stiller's hypothesis of gastric atony is unfounded. Elsner furthermore quotes Rose, who looked for splashing-sounds in 100 patients. In 70 cases the sounds were present, while in 33 of these cases there was no gastric complaint. Elsner remarks that in practice the physician who accepts splashing-sounds as an evidence of gastric atony and who prescribes limitation of diet for no better reason, will often commit a grave injustice on his patient.

**Acute Ascending Paralysis in Basedow's Disease.**—Charcot first called attention to the paralysis of the extremities occurring in Basedow's disease. In his case a sudden giving away of the legs was the first symptom of paraplegia. Complete paraplegia may occur without disturbance of sensation, without weakness of the bladder or muscular atrophy. The patellar reflex is diminished or lost. The most complete record of such cases is that of Mackenzie. In the German literature comparatively few instances are found. M. ROSENFELD (Berl. klin. Woch., June 9, 1902) describes a case in which the cachectic period of the disease was ushered in with an acute ascending paralysis which followed a course similar to that of Landry's disease. The patient had been ill for two years. Exophthalmos and extreme nervousness had been present for a year, but the patient followed his occupation without interruption. On June 12th headache and nausea in the morning were followed in the afternoon by lumbar pains and a sense of weight in the lower extremities. The following day the pain and weakness increased and compelled a cessation of work. There was no fever. The sensorium was normal, as were also the cranial nerves and upper extremities. Walking and standing were impossible. The right limb was absolutely powerless; the patellar reflex was wanting. The left leg could be slightly moved and a slight reflex was obtainable on this side. The bladder and rectum were normal. The chief subjective complaint was lumbar pain radiating to the extremities. A few hours later the patient was unable to sit erect and could move his arms only with great difficulty. Before night the arms were paralyzed and the head could not be moved; slight motion was present in the fingers; respiration continued normal, but the bladder was paralyzed. There was no loss of consciousness. The following day voluntary motion in the extremities returned. A rapid loss of weight followed this attack and was accompanied by an accentuation of all the ordinary symptoms of Basedow's disease; a permanent loss of muscular power remained. On two subsequent occasions similar attacks occurred, but were not so severe as the first. Stigmata hysterica were entirely lacking. On various grounds hysteria can be excluded; the prodromata, the severe collapse at the beginning of the paralytic attack, the gradual ascending paralysis, the disappearance of the right patellar reflex during the paroxysm and the fact that subsequently there remained a slight paresis of the right leg with diminished reflex, all speak against hysteria.

**Aids to the Diagnosis of Tuberculosis.**—It is not to be denied that despite the many physical, microscopical and bacteriological methods which can be applied to the human body, the diagnosis of tuberculosis is often reached only with considerable difficulty. A. CASINI (Wien. med. Blät., May 29, 1902) reviews the various means at one's disposal and mentions as the oldest of the more modern the injecting of suspicious material into the peritoneum of guinea-pigs. Excellent as is this method, it is troublesome, not always successful and requires too much time. The microscopical examination for a tubercle bacilli is much more satisfactory, but also frequently negative. Three other

more recent methods may then be employed: The test with Koch's tuberculin, serodiagnosis and cytodiagnosis. Serodiagnosis depends upon an agglutination of a homogeneous culture of tubercle bacilli by the serum of the suspected patient; unfortunately the serum of persons afflicted with a number of other diseases and even of healthy individuals, sometimes gives the same reaction. By cytodiagnosis is meant the preponderance of lymphocytes in exudates; it is especially valuable in the examination of doubtful pleurisies.

**Carcinosis of the Central Nervous System.**—The central nervous system is rarely invaded by carcinomata; when they do occur, they are generally metastatic in nature. The course is generally rapid according to E. SIEFERT (Münch. med. Woch., May 20, 1902) and the brain is more often involved than the cord. Generally situated at the border between white and gray matter, the metastases vary considerably in number; they rarely exceed the size of a cherry and remain sharply demarcated from the surrounding tissues, though it is possible that they may be entirely overlooked at autopsy. Pressure symptoms do not occur, since the growth is one by substitution. With the invasion of the pia, the subarachnoid spaces will soon suffer and increased growth is invariably noticed since here less resistance is offered. In the vertebral canal the tumor presents the shape of an irregular, cylindrical tube with its strongest development in the dorsal region especially at the point of exit of the posterior nerve-roots. Inflammatory processes and hemorrhages are always present and may form the predominant pathological lesion. The last stage is that of an erosion of the nerve-substance. It follows that the course is very rapid, extending over many weeks, with symptoms partly mechanical, partly toxic. The diagnosis is apt to be difficult unless the primary tumor, usually situated in the lungs, is apparent. An advanced age, rapidly-developing cachexia, increasing apathy, delirium alternating with lucid intervals, disturbances of speech reminding one of paresis, absence of choked disk, pain and stiffness of the neck, focal symptoms, such as pains and bladder disturbances, are characteristic and should prevent mistakes.

**Reflex Spasm Caused by Ascaris.**—Attention is called by J. P. NAAB (Münch. med. Woch., May 13, 1902) to the possibility of mistaking certain cases of ascaris for more serious disorders. A child may be seized suddenly with convulsions which soon are followed by coma, and a provisional diagnosis of meningitis may be made until the cause is discovered in the stools and rapid recovery takes place after santonin and calomel. The number of worms found does not seem to govern the severity of the symptoms since in quite severe cases only a few were present. An excessive secretion of saliva seems to be a valuable symptom from a diagnostic point.

**Douches and Irrigants.**—A douche or irrigant has for its object mechanical removal of morbid secretions, accumulations and foreign bodies, antisepsis and diagnosis. A proper relation between the means and the object must be subserved in order that suitable results may be obtained. Unfortunately such relation is not a matter of common knowledge among practitioners. W. WINGRAVE (Lancet, May 17, 1902) discusses in a very able manner this really important subject. He makes the essentials of douches the following: (1) The solution should always be a solvent of the substance to be removed. (2) The reagent should be itself readily soluble in water and in a clear solution. (3) It should be non-irritating to mucous membranes and sensitive surfaces. (4) To insure thoroughness it should possess the power of penetrating the surface of tissues. (5) It should be chemically compatible with the most effective antiseptics. (6) It should be economical in cost and readily available everywhere. Of these elements the most important is that of dissolving the discharge. There are many solutions in use which have no such action, but really precipitate and harden the substance which they are intended to remove. Therefore a knowledge of the nature and composition of discharges must be possessed; a brief survey of this question is the following: They are either (1) catarrhal, (2) serous, (3) purulent, (4) ceruminous and cholesteatomatous, or (5) fibrinous and hemorrhagic. Catarrhal products as commonly met with in the nose, nasopharynx, and less frequently in the ear, may be viscid or inspissated even into crusts. From mucosæ the fluid consists of an alkaline solution of mucin, globulin, serum albumin in proportions varying with the intensity and nature of the morbid process, mechanically suspended epithelial cells in varying degrees of mucoid degeneration and leucocytes and various bacteria. Of the organic elements mucin is readily soluble in weak alkaline solutions of bicarbonate of sodium (.5 to 1 per cent.), but insoluble in acids, while the cells and serum globulin are soluble in weak solutions of neutral salts, together with the nucleo-albumins of the cells. Albumin itself is soluble in water. The serous discharges rarely call for special removal except when localized. In them globulin occurs in greater proportion than mucin, therefore neutral saline solutions should be selected. Pus will obviously vary according to the conditions of production and duration of retention. It may be thin, thick, solid, caseous, sweet or foul, etc. Hoppe Seyler gives in 100 parts of dry pus, proteids 16, nuclein 34, fats and lecithin 14, cholesterin 7, cerebrin 5, extractives 4, and insoluble substances 20. Halliburton gives nucleo-albumin, cell-globulin, albumoses, and peptones as the chief constituents. In the fluid part serum globulin with small quantities of serum albumin and albumoses will be found while the organized solid or cell-elements, like leucocytes, connective-tissue fragments, etc., will yield nucleo-albumin, cell-globulin, and nuclein, also fats, lecithin, cholesterin, etc., in varying degrees of fatty or other degeneration. All these are soluble in weak solutions of either neutral or alkaline salts respectively. Cerumen varies from a thick molasses-like consistence to that of a firm plug more or less mixed with epithelial cells, hairs, parasites, dust and other matter. Being fatty in nature it is readily soluble in alkaline salts, but as the contact with an irrigant is so short and the plug so dense, softening by means of a strong alkaline solution, preferably in glycerin, is often a preliminary to the douche. Cholesteatomata consist of closely-packed, laminated, squamous epithelium with fatty granules and cholesterin crystals. The cells will yield much keratin and nuclein. Both with the fat are soluble in alkalies. Sometimes, as in middle-ear suppuration, the epithelium is mixed with pus; if so, the neutral salts also should be used in combination. Plastic exudation consisting chiefly of fibrin entangling leucocytes in its meshes is extremely difficult of solution and rarely admits of more than a softening process in neutral and alkaline salt solutions, such as sodium sulphate, calcic hydrate, etc. This applies also to blood-clot, which is however less dense and frequently much more readily removed by similar irrigants. Knowing the nature of the discharge and the solvents of its chief constituents there should be little difficulty in selecting an efficient irrigant for both chemical and mechanical action. The following will be of advantage as showing solvents and precipitants:

Solvents: Sodium sulphate (from 1 to 2 per cent.); potassium (from 1 to 2 per cent.); magnesium (from 1 to 2 per cent.); ammonium (from 1 to 2 per cent.);

sodium bicarbonate; sodium chloride; sodium hydrate; sodium biborate; sodium sulpho-carbolate; calcium chloride; calcium hydrate; potassium hydrate; potassium carbonate; chinosol.

Precipitants: Water (except albumin); mercury biniodide; mercury perchloride; alum; zinc chloride; zinc sulphate; zinc permanganate; potassium permanganate; hydrogen peroxide; formalin; carbolic acid; boric acid; liquor sodii chlor.; liquor carbonis detergens; izal; alcohol (fats excepted); sulphurous acid.

As of general service he recommends the following formulæ:

(1) Sodium sulphate, from one and a half to three drams; water to one pint (20 fluid ounces), from 1 to 2 per cent. (2) Sodium sulphate, from one and a half to three drams; sodium bicarbonate, 40 grains; water to one pint. (3) Sodium sulphate, from one and a half to three drams; borax, 40 grains; water to one pint. (4) Sodium sulphate, from one and a half to three drams; sodium bicarbonate, 40 grains; glycerin of carbolic acid, 45 drops; water to one pint. [Note: Instead of glycerin of carbolic, absolute phenol, 9 grains or No. 1 carbolic acid may be used. Heat to 165° F.] (5) Borax, 40 grains; bicarbonate of soda, 40 grains; glycerin of carbolic acid, 45 drops; water to one pint (diluted Dobell's solution). (6) Sodium sulphate, one and a half drams; chinosol, 10 grains; water to one pint. (7) Sodium sulphate, one and a half drams; sanitas, three fluid drams; water to one pint. (8) Sodium sulphate, one and a half drams; perchloride of mercury, two grains; water to one pint (1 in 5,000). (9) Sodium sulphate, one and a half drams; red iodide of mercury, two grains; sodium iodide, two grains; water to one pint. (10) Sodium sulphate, one and a half drams; potassium permanganate, two grains; water to one pint. (11) Sodium bicarbonate, 40 grains; potassium permanganate, two grains; water to one pint. [Note: Borax (40 grains) may be used instead of sodium bicarbonate.] (12) Solution of calcium chloride (P.B.) six fluid drams; water to one pint. [Notes: The pure exsiccated sulphate of sodium should always be used in preference to the ordinary crystalline salt. Bicarbonate is preferable to carbonate of sodium. Hot water whenever convenient should be employed to make the solutions. Solutions of phenol should be heated to 155° F. No. 1 is a simple irrigant for pus; Nos. 2 and 3, when mucus is present or when the discharge is inspissated; Nos. 4, 5, 10, and 11 for inspissated fetid mucus or "crusts;" Nos. 6, 8, and 9 as antiseptics, and No. 7 and 10 as deodorants. No. 12 is chiefly employed for its hemostatic property.] In addition to purely mechanical use a douche may be required for antiseptic purposes. Unfortunately the most valuable antiseptics are precipitants of proteids and therefore not thorough irrigants; consequently, it is more often expedient to irrigate first with the solvent and to use the antiseptic afterward, as in a case of suppurative middle-ear disease. This need not, however, always be done, since biniodide of mercury, phenol, chinosol, and many powerful antiseptics are not only miscible in pure sodium sulphate, but when mixed do not precipitate proteids so readily as would a plain solution of the antiseptic. This is a property of no slight importance. Similarly potassium permanganate may be combined with sodium bicarbonate or biborate. Chinosol mixed with sodium sulphate affords not only a clear solution, but one of high sulphate or antiseptic properties. Its great disadvantage is cost. He protests against the use of popular formulæ which combine thymol, eucalyptol, menthol, and other aromatics with various inappropriate salts as antiseptic douches, because they are not only extremely irritating to mucosæ, especially the nasal, but their solvent and antiseptic properties are matters of doubt. They are really only deoderants. In atrophic rhinitis a very good, economical and active douche is ordinary sea-water. It should be boiled well, decanted and used warm at a temperature of from 60 to 70° F. A pinch of sodium bicarbonate to the pint may be added when the crusts are very firmly adherent. When employed for diagnosis, douches must be transparent and colorless, hence creolin, izal, permanganate, etc., are to be avoided. It is also inadvisable to employ any precipitant like bichloride of mercury for exploratory irrigation. He adds a word as to the method of employing and the special instruments for douching. The special purpose of the douche and the question of whether it is for use by surgeon or patient are important factors. This distinction is by no means unimportant, because a patient rarely knows the possibility of infection and the importance of perfect cleanliness. In this case he is perhaps not entirely to blame because the ordinary apparatus at his disposal, for example, the rubber ball, glass or metal syringe is without doubt the most dangerous weapon ever employed. An ocular, olfactory, or bacteriological examination of the interior of any such instrument would emphasize this question greatly. The cause of this is obvious, because no apparatus filled at the mouth which comes into contact with a dirty wound can escape contamination of its interior, except through special care, which cannot be expected of an ordinary patient. In the case of aural and nasal douches the application to the nozzle of a short piece of rubber tubing, which can be renewed and removed and sterilized greatly reduces the risk of infection or injury during use. The ordinary hydrostatic douche is not liable to infection in this particular way, but is a clumsy instrument and not advised for delicate, deliberate work in aural cleansing, since it admits of but slight variation in volume and pressure. Grant's modification of the piston syringe is thoroughly efficient in guarding against infection by being fitted with a two-way cock which admits of filling through a separate channel. It is very difficult, however, for the patient to use it himself. The aseptic douche of the author is much more efficient for the patient to use; it closely resembles the well-known Davidson hand-ball syringe, and gives force, direction, and volume to fluid directly under control, inlet and outlet valves compelling it to be filled only from the distal end. It is wide in application, especially valuable in ear diseases which require great care in auto-irrigation and in those forms of rhinitis demanding a copious douche. He recommends in strong terms the nasal douche-cup, only known in this country as the Bermingham, for all cases of nasal disease in which a small quantity of irrigating fluid is necessary.

## PATHOLOGY AND BACTERIOLOGY.

**Albumin in Urine.**—It is generally accepted that the nitric-acid test is perhaps the most reliable of any in determining the presence of small amounts of albumin in urine. A new method of applying this test to save time is described by L. N. BOSTON (N. Y. Med. Jour., May 24, 1902). A glass pipette is used and the urine allowed to run up the tube one or two inches. The index finger is then placed on the top and the urine washed and dried off the outside of the tube. It is then inserted into nitric acid and the index finger partially removed to allow the acid to flow up the tube. The presence of albumin always causes a white ring to form at the line of contact. Globulin, albumoses and peptones may also cause a small ring at the zone of contact, but they are seldom present. If suspected they may be tested for by boiling the urine. A cloud appears just before the boiling-point is reached, but

disappears when boiling occurs. Urates may cause a similar ring. Similar experiments have been tried with twelve other reagents which have been recommended for detecting albumin in urine, but the results were never so satisfactory as when nitric acid alone was used.

**The Intestinal Toxins, Indol and Skatol.**—This latter toxin possesses almost the same attributes as does the former, therefore, J. LE CALVÉ (Archives Générales de Médecine, May, 1902) largely confined his experimental study to indol. It is found in cultures of the microbes of hen-cholera, septicemia of rabbits, tetanus and cholera, and very abundantly in cultures of the colon bacillus. It is produced normally in the intestine and increases with intestinal putrefaction, but in the liver is in great part changed to a less toxic substance, indican or indoxysulphate of potassium, which is eliminated in the urine. The part not transformed by the liver is eliminated by the feces. In many conditions, typhoid fever, tuberculosis, digestive troubles, uremia, etc., indol is absorbed in excess, therefore its effects should be well understood. Five minutes after the hypodermic injection of one centigram of indol dissolved in alcohol, a rabbit becomes dejected, uneasy, retires to a corner, and curls himself up, dull and somnolent. His body trembles, respiration is at first increased, then slowed to less than half the normal rate, remaining thus several hours, and may even be Cheyne-Stokes in type. The pulse and blood-pressure are slightly diminished, the temperature drops one degree, and there is usually insensitiveness to stimulus, though occasionally there is hyperesthesia. The urine contains much indican but never albumin. Animals killed at different periods after injection showed a special action on the nerve-centers and the kidneys. The medulla oblongata is affected first by an edema, which soon involves the cerebrum with increase of cerebrospinal fluid and dilatation of the ventricles. The kidney is much congested and may be edematous. Injections continued every day for several weeks never caused death, and affected the animal only for a few hours following the injection. A slight increase of the surrounding temperature is always accompanied by augmentation of the symptoms, the animal appearing as if sunstruck, yet a hot bath quickly restores to the normal. The authors believe that the poison especially attacks the vasomotor centers, but in ordinary conditions may be considered a physiological rather than a toxic agent. Edema of the brain and spinal cord, pia mater, and of the extremities results from the vasomotor paralysis, and all the symptoms are secondary to this. The vasomotor effects are identical with those resulting from exposure to cold. From their experiments the authors recommend the hot bath in sunstroke, in active and passive congestions, edema of the lungs, kidney affections and in hyperemia of the nervous system.

**Liquid Air as a Freezing Medium in the Laboratory.**—The extreme cold of liquid air makes it impossible to use it in medicine and surgery upon the living subject except when destruction of tissue is desired. Even here the actual cautery is far preferable, because it is much more thoroughly under control. In the laboratory, however, as a freezing medium liquid air is no doubt of service. The following notes upon this subject are offered by W. H. B. STODDARD (Lancet, May 17, 1902). Briefly, liquid air is obtained by mechanical compression of ordinary atmospheric air to one eighth-hundredth of its volume, and by removal of the impurities by fractional solidification. It is a fluid like water in appearance, but of lower specific gravity, boils at a temperature of —312° F. and therefore at a temperature of the atmosphere when placed in ordinary vessels, but evaporates quite slowly when stored in the vacuum flasks used by the manufacturers. An untouched gallon evaporates from such storage-flask in about six weeks. In the ordinary constant use in the laboratory it will last about two weeks. Liquid air is therefore very much cheaper than ether for laboratory purposes, and acts much more readily, because about 20 to 30 compressions of the India rubber bulb are always sufficient to freeze the gum, and the tissue remains frozen much longer. It has not the unpleasant smell of ether; instead of that, pure air issues from the microtome. He has had an opportunity of inspecting the impurities removed from the atmosphere in the process of manufacture of liquid air and has observed that the stench from these is worse than that from the worst London fog. He therefore regards this supply of pure air as most important by making pathological work more pleasant and healthful. While working with liquid air the best method of ventilation for the laboratory is to shut all the doors and windows and to be satisfied with the pure air issuing from the microtome. It is no exaggeration to say that after a morning's work in the laboratory with liquid air one feels as if he had had a trip in the country. The vacuum-flasks in which the liquid air is stored are made of glass, each consisting practically of two flasks, one inside the other with a vacuum between the two. For use with a Cathcart microtome a support for one of the flasks is a necessary attachment; this consists of a wire loop sufficiently large to support the body of the flask and then bent at right angles twice, so that while the upper end is fastened to the base of the microtome the loop stands horizontally, sufficiently below the level of the microtome to hold the flask and allow the exit from it into the microtome to be horizontal. This exit is a simple nozzle fitted into the side of the cylinder, playing on the under surface of the plate. An India-rubber cork with two holes is fitted into the vacuum flask. Through one of these holes a glass tube passes from the vapor above the liquid air to a piece of India-rubber tubing which constitutes the exit. This India-rubber tube freezes hard while the microtome is in use and thus forms another support for the flask. Through the other hole in the cork there passes another piece of glass tubing, one end of which dips below the surface of the liquid air while to the other is attached a valvular India-rubber bulb. The tube is expanded where it dips into the liquid air. The whole apparatus is worked on the same principal as a Junker chloroform inhaler. By means of the India-rubber bulb atmospheric air is blown through the liquid air. The liquid air is vaporized and plays on the under surface of the plate of the microtome. As the atmospheric air passes into the liquid air the moisture from the former condenses on the inner surface of the glass tube, which soon becomes blocked with ice unless it be dilated.

**Sensibilizing Substances.**—The sensibilizing substances (Immunkörper) in the blood of typhoid-fever patients have been studied by GEORGIEVSKY (Bolnichnaja Gazeta Botkina, N. 17, 1902). In order to detect these substances he used Bordet-Gengon method, which consists in the following: Blood-serum, in which the Immunkörper are to be looked for is warmed to 50° C. to decompose the alexins; then there is added to it blood-serum of another animal which is lytic for some erythrocytes; to this mixture is added an emulsion of typhoid bacilli. If the first blood-serum contain typhoid Immunkörper, the typhoid emulsion will be sensibilized and will absorb the alexins from the second blood-serum, which will consequently lose the power to solve the erythrocytes which were further added to the mixture, while if the first blood-serum does not

contain any typhoid Immunkörper the alexins of the second blood-serum will not be used up by the typhoid bacilli, and the erythrocytes subsequently added to the mixture will be solved. With this method the author obtained highly interesting results. As long as the fever lasts the blood-serum of the patient contains no Immunkörper, but they begin to appear as soon as the temperature becomes normal. There is no relation between the appearance of these substances and the agglutinating properties of the serum.

## OBSTETRICS AND GYNECOLOGY.

**Tubal Gestation.**—For the last twenty years, except for the recent tendency to something like expectant treatment in some cases, the diagnosis of tubal pregnancy has been considered to indicate abdominal section, says F. H. CHAMPNEYS (Jour. of Obstet. and Gyn. Brit. Empire, June, 1902). In a detail of a series of 75 cases, 34 were left alone and recovered, a proportion of 45.3 per cent., and to these should be added those in which the cyst was evacuated by vaginal section in order to get rid of a tumor before the patient was discharged. These cases numbered 11, and, added to the 34 which were left alone throughout and recovered, reach a total of 45, or 60 per cent. of the total number. Ruptured tubal gestation (including tubal mole, etc.) must always be a dangerous affection. The question whether in a given case expectant treatment is safer must depend upon several considerations. Distance, for example, comes in. If the patient be in some inaccessible place, and can not be watched it may be safer to do abdominal section. If there have been repeated attacks, the presumption is that there may be others. Errors in judgment may occur; our present means of prognosis in these cases are far from complete, but it must be remembered that abdominal section for ruptured tubal gestation is in itself a perilous proceeding.

**Infected Ovarian Cysts.**—Certain organisms have been definitely identified in suppurating ovarian cysts, such as the streptococci, staphylococci, colon bacillus, the gas-producing bacillus, the tubercle and the typhoid bacillus, says REUBEN PETERSON (Amer. Jour. of Obstet. and Dis. of Women and Children, June, 1902). The organisms may gain access to the cysts in various ways: They may pass through the cyst-wall either from the peritoneal cavity or from some other adherent viscus rich in germs; through the circulation, either directly through the arterial circulation of the pedicle, or by way of the venous circulation after the formation of a phlebitis, a retrograde infection. Infection may take place by way of the lymphatics. Germs may be introduced directly into the interior of the cyst by aspiration or puncture through the abdominal wall or vagina. Because of their small size and slow growth, dermoid cysts are more liable to traumatic changes, and to infection. When the pedicle of an ovarian cyst is twisted and the circulation completely shut off, the conditions would seem most favorable for subsequent infection of the cyst contents. The natural history of suppurating ovarian cysts, especially dermoids, shows that they are prone to empty into some neighboring viscus, rectum, vagina, bladder, or even the ureter. The author's conclusions are as follows: (1) Suppuration of an ovarian cyst is a most serious complication and is productive of a high mortality, with or without operation. (2) The contents of the cyst should be carefully examined bacteriologically and microscopically, in order to shed light upon the etiology and pathology of the condition. (3) There is good reason for the supposition that certain ovarian cysts reported as suppurating did not in reality contain pus, but the pathological changes were described from their gross appearance. (4) In cases in which the cyst has been shown definitely to contain pathogenic bacteria, the majority of patients operated upon by the abdominal route have died of general peritonitis. (5) Hence better results may be expected from vaginal incision and drainage in similar cases when the suppurating cyst does not reach much above the limits of the pelvis, since liability of contaminating the pelvic peritoneum will be greatly diminished.

**The Term, Tubal Abortion.**—It is but a dozen years since Lawson Tait in his dogmatic manner, declared, "No authentic description exists of an unruptured tube pregnancy." J. WESLEY BOVÉE (Amer. Jour. of Obstet. and Dis. of Women and Children, June, 1902) is sure that the abdominal surgeon can now readily recognize this condition. No authentic case can be found in which the ovum has been forced from the tube through the isthmus into the uterus. On the other hand, cases are met with in which the development of the ovum has been interrupted and a portion or all of it has been expelled through the distal end of the tube into the peritoneal cavity. The author thinks that it would not seem productive of harm or confusion to apply to this condition the term "tubal abortion," particularly as so-called technical tubal abortion is not known. The term abortion was employed long before ectopic pregnancy became a subject of great study and abdominal surgery such every day work. It was applied to interrupted normal pregnancy by expulsion of conception products from the uterus by the same route as in normal parturition, and to this day this usage is in vogue. It is also applied to the premature ending of processes other than gestation and in a freer manner. There seems to be no law for this application of the term in connection with gestation other than usage, and, as the study of the tubal form has developed the fact that the tube as well as the uterus can empty itself of conception products, it would seem highly proper to apply the term "tubal abortion" to such processes without regard to the end of the tube through which it is emptied.

**Puerperal Eclampsia.**—The pathogenesis of puerperal eclampsia is still a *questio vexata* and must, therefore, be a subject of perennial interest until further investigation sheds light upon its dark places, says GEORGE T. HARRISON (Amer. Jour. of Obstet. and Dis. of Women and Children, June, 1902). In recent times observations have multiplied which tend to demonstrate with more and more certainty the toxic origin of eclampsia. The toxicity of the blood-serum forms, according to Chambrelent, an important criterion for an opinion as to the gravity of a case of eclampsia. It is more decisive for the prognosis than the degree of albuminuria and the number of the convulsive attacks. The toxic qualities of the fetal blood though not constantly, are frequently considerably increased. The urine of the pregnant woman is less poisonous than the urine-pregnated subject; the blood-serum, on the contrary, more poisonous. The serum of the eclamptic is more poisonous than that of the normal parturient woman; the toxic condition increases with the stage of convulsion. The urine of the eclamptic is always, at the time of the increased toxic condition of the blood-serum, less poisonous than normal urine. Ludwig and Savor assume that carbamic acid accumulates during pregnancy in consequence of the disturbance of the metabolism and causes the toxic condition of the organism. Massen thinks that the toxic substances are leucomaines. A number of observers have endeavored to demonstrate the bacterial origin of eclampsia, but so far without success. Veit and Olshausen hold that the eclamptic attack is determined by brain anemia. With reference to treatment too much emphasis can not be laid upon prophylaxis. If the prodromic symp-

toms are plain, and especially if the phenomena indicate a disturbance of renal function, the hot pack should be used and the patient put on a milk diet; at the same time one should not neglect to see that the bowels are performing their proper function. When eclampsia has broken out the indications are, first, to lower the excitability of the brain by narcotics; secondly, to cut off the effects of the centripetal irritants starting from the sexual organs by as speedy an ending of the labor as possible, consistent with safety to the mother organism; third, to counteract the effect of the toxemia by restoring the function of the kidneys as quickly as possible and by producing elimination through other channels.

**Latent Hemorrhages during Pregnancy.**—Hemorrhages during the latter portion of gestation form an interesting and not infrequent complication of pregnancy. J. A. DOLÉRIS (La Gynécologie, Apr. 15, 1902) reports two such cases. The first was a multipara in the seventh month. She was suddenly seized with a pain in the abdomen followed by a uterine hemorrhage. Five days later the patient went into labor and was delivered of a dead fetus. Following the birth of the child about a liter and a half of clotted blood came away. An examination of the placenta showed that the hemorrhage had been due to a spontaneous rupture of the circular sinus. The second case showed a large cystic tumor of the peri-abdominal region into which a bloody extravasation had taken place by probable rupture of its blood-vessels. This condition produced premature labor in the patient with expulsion of two dead fetuses. The patient was operated upon and the contents of the sac were evacuated with final recovery. Such conditions have taken place after trauma as in the case reported by Champetier de Rihes. Lepage also reported a case occurring in the fourth month of pregnancy.

**The Prevention of Conception.**—The use of various devices for the prevention of conception is not only a matter of sociological interest, but presents a medical aspect of great interest, as is shown in a paper by KOLISCHER (Medicine, June, 1902). The appliance used by the woman, the so-called occlusive pessary, is of most interest medically. It is sold in various modifications, but consists essentially of a firm rim enclosing a central diaphragm of soft rubber, which is expected to cover the external os. As a rule, such pessaries are inserted after the menstrual period, and left in position until the next menstrual flow. In a large number of women, their presence acts as an intense irritant to the vaginal epithelium, and sets up a copious catarrhal secretion. These secretions undergo decomposition when retained, and awaken the potential virulence not only of the ordinary parasitic germs in the vagina, but also of the latent gonococci. Thus arises either a non-specific or a specific vaginitis, which is transferred in the same form to the urethra of the male. Not only this, but the entire upper genital tract may become secondarily involved. The author concludes that the use of soft-rubber occlusive pessaries is always a dangerous measure, especially if they be left in the vagina during the interval between two menstruations. If used at all, they should be removed at short intervals, and effective antiseptic douches employed.

**Thyroidotherapy in Eclampsia.**—It is well known that various morbid states follow any anatomical alteration in or changes in the function of the thyroid gland. Upon a number of various diseases and in particular convulsive effects thyroidotherapy has a very good effect. H. O. NICHOLSON (La sem. méd., May 21, 1902) has obtained excellent results in various cases of puerperal eclampsia, which he treated by rest in bed, pure milk diet, subcutaneous injections of morphine to the degree of controlling the convulsions, and then the regular administration of thyroid extract in doses of 0.30 grams, repeated if necessary every three or four hours. Under the influence of this medicine, together with proper diet and management, the symptoms of the disease, especially headache, albumin in the urine, edema, loss of vision, and the like, began to and steadily continued to disappear in a few days. According to this observer, the use of thyroid extract is of value as a means of preventing this phenomenon, especially in women who give a history of having had eclamptic seizures during previous pregnancies.

**Trauma Sub Coitu.**—This is a rare occurrence, but is of sufficient medicolegal importance to warrant consideration whenever cases are reported. Moreover, any effort to explain examples of it, which do not happen as crimes, should receive due heed. G. BOHNSTEDT (C'blatt f. Gynaek., 1902, No. 17) offers the following explanation which agrees with that given by Schaeffer. He assumes a cramp which takes place in the muscular tissue of the vagina and of that outside of the vagina, especially the pelvic floor, and results in a most vigorous and resistant tonic state of the entire region and is probably referable to neuropathic conditions. The suggestion that this neuropathic state might after all be the cause of such accidents was presented to him by the result of an attempt to suture the damage. During the operation precisely such a cramp or spasm took place and hindered the placing of the sutures to a marked degree. While it is not necessary to assume a basis in neurological pathology, it is possible to grant that such a spasm, no matter what its source may be, would certainly very largely account for this undesirable and usually unfortunate accident.

**Malformed Fetus.**—As matters of curiosity usually and of scientific interest occasionally malformations of the fetus deserve note. N. ELRINGTON (Lancet, May 17, 1902) describes the following case: The mother was a laborer's wife. The body of the child was well developed and the lower part of the face was normal for an ordinary full-time child. The frontal bones, however, were widely separated and flattened backward so as to be almost at right angles to the face. The eyes were very far apart and the eyelids protruded. The parietal bones were small and what would have been their upper margins were pointing almost directly backward. The occipital bone was represented by two small bony strips lying close to the posterior edges of the parietal bones. All the cervical and the upper five or six dorsal vertebræ were apparently wanting. The chin rested on the second piece of the sternum. The ears, which were abnormally large, lay in front of the shoulders. The back of the head and neck was occupied by a mass of freshly-formed blood-clot, which in one place had burst through the skin. There was no hair and the skin of the head was very thin. The labor occurred at full term and the mother was certain that the child was alive two hours before her pains began, which was only three hours before the child was born. He had to be content with an external examination and consequently cannot say what was the condition of the brain and spinal cord. There was nothing during the pregnancy out of the ordinary except an excessive amount of liquor amnii. He thinks that there is no doubt that the child died from the effect of pressure during birth. The presentation was somewhat bewildering, but the progress of the labor was rapid and the child was born with the chin presenting under the symphysis pubis without any difficulty. The arrangement of the cranial bones may have been artificially produced by a face presentation in a child with cranial bones not only very thin, but not developed sufficiently to stand the strain of pressure within the parturient canal.

**Hemostasis of the Broad Ligament.**—The almost universal employment of absorbable ligatures about the broad ligament is a protest against the retention of foreign bodies in the peritoneum and an admission that the less material one uses the better. In addition to ligatures the following mark the several stages of progression toward the ideal hemostasis, namely, the ecraseur, thermocautery, torsion, retention forceps, electrothermic forceps, and the angiotribe. Hemostasis should insure absolute security against hemorrhage, whether primary or secondary, protection against septic contamination, the least injury to the parts treated, and the absence of foreign bodies in the wound. By the use of the electrothermic forceps and the angiotribe it is possible to approach very nearly these ideal conditions. The former can be used only when electricity is at hand and is therefore available rarely except in hospital practice. The angiotribe is often imperfectly constructed, fails in some particular, is carelessly used and therefore does not give uniform results. H. P. NEWMAN (Annals of Surgery, June, 1902) states that his own experience with the angiotribe has been most satisfactory, without a single case of secondary hemorrhage. He has, however, reinforced its use with ligature in selected cases. If ligation *en masse* be done the ligature may loosen and slip, by shrinking of the stump, or the larger vessels may retract away from it. Individual ligation, on the other hand, may fail to secure all of the important vessels by mere accident, but of the two methods single the latter is to be preferred to the former. The method he employs is a clamp of his own design applied to the appendages of tumors with pedicles, to the root of the blood ligament, and directly across the pediele of other tissues removed. When a large vessel is clamped he usually turns the instrument sufficiently to follow it and then secures that vessel by an individual ligature. Sometimes collateral branches are large enough to require individual attention. The best example of this is the ovarian artery in the broad ligament which may need tying more than once. The pressure of the clamp controls all oozing while these individual ligatures make bursting of the large vessels through the grayish tissue impossible. The advantages he claims are the following: (1) Complete and permanent hemostasis, with no possibility of the ligature slipping either off the end of the artery or of the stump. (2) Inability of the artery to contract and draw away from the grasp of the ligature and form hematoma or hematocele. (3) By the combined use of the angiotribe and ligature multiple thrombi are formed, plugging the vessels most securely. (4) There is no puckering up or massing together of broad ligament tissue to draw upon or displace other organs or structures. (5) No strangulated stump tissue remains to slough, granulate, and form adhesions. (6) The amount of foreign matter left in the wound is reduced to a minimum. (7) The rapidity of this method and its bloodlessness materially lessen the danger of postoperative shock. (8) Convalescence is eased materially and hastened to a marked degree.

## THERAPEUTIC HINTS.

**Chloral Hydrate as a Vesicant.**—When a marked effect is rapidly required, chloral hydrate is better than cantharides and has none of its disadvantages. With children, next to iodine it is the counterirritant of choice. The blister will produce erythema, vesication or ulceration, as desired.—M. T. BRENNAN in Montreal Medical Journal, May, 1902.

**Hyperchlorhydria.**—All kinds of alkalies can be used in this affection. Calcined magnesia and magnesium ammonio-phosphate neutralize four times as much acid as does bicarbonate of sodium. The following are serviceable:

℞ Sodii bicarb.
Magnes. ust. .....aa. 20.0 (℥v)

Sig: Half to one teaspoonful three times a day, two hours after meals. Or:

℞ Sodii bicarb.....20.0 (℥v)
Magnes. ust.
Magnes. ammonio-phosph.aa.... 10.0 (℥iiss)

Directions as above.

When constipation exists one may use:

℞ Magnes. ust.
Pulv. rhei.....aa. 7.5 (℥ij)
Sod. carb. exsiccat.
Sodii bicarb.
Eleosacch. menth. pip.....aa. 15.0 (℥iv)

Sig: Half to one teaspoonful three times daily, two hours after meals, in water or vichy.

The alkaline treatment can be continued for very long periods without any ill effects whatever. With sleeplessness, headaches, excitability, etc., one may prescribe:

℞ Stront. bromid.....12.0 (℥iij)
Aq. menth. pip.....60.0 (℥xv)

Sig: One teaspoonful in milk twice daily at meal time.

The bromides should not be given continuously for longer than a week. In protracted hyperchlorhydria the direct application of the electric current to the inside of the stomach is frequently of the greatest benefit. —M. EINHORN in "Diseases of the Stomach."

**Habitual Constipation.**—This condition should not be considered cured, writes I. BOAS (Diseases of the Intestines) until the bowels move regularly without any mechanical or medicinal co-operation, the diet being normal or nearly so. Children should early be taught to have a set time for their daily evacuations, and in them the habitual use of laxatives should be avoided. For adults Penzoldt's diet is applicable. It is as follows: 7 a.m., a glass of cold water; 8 a.m., a liberal breakfast with sweetened coffee, a good deal of butter, honey, and graham bread or pumpernickel, after which the patient should go to stool; 1 p.m., meal of meat, a good deal of vegetables, salad, stewed fruits, farinaceous food, half a bottle of light wine; 7 p.m., meat with a good deal of butter, graham bread, stewed fruit and beer; 10 p.m., fresh or stewed fruit before retiring. Buttermilk or Kefir, or a diet rich in carbohydrates may be sufficient without the above régime. Such a diet, though, is obviously not suitable in diabetes mellitus, glycosuria, obesity, gastric atony, hyperacidity, ulcer of the stomach, gastric dilatation, carcinoma of stomach or intestine and in flatulence. The glass of water in the morning with a pinch of salt added is excellent in itself. There are patients who are cured by absolute rest in bed after other means have failed. Yet, in general, exercise is a good thing, and especially that which works the abdominal muscles, such as rowing or lying down and raising the trunk to a sitting posture without the assistance of arms or legs. A powerful measure is the use of cold compresses, or alternate cold and hot sprays over the abdomen. The ether spray has been used in obstinate cases for a number of years. The continued use of laxatives is not necessarily harmful, many persons taking a simple pill for years. But if these laxatives be inadequate or occasion gastric or intestinal discomfort other means must be adopted. The state of the stomach, liver, etc., must be considered; for instance, calcined magnesia and Carlsbad salts are also antacids, and podophyllin and euonymin are cholagogues. In cases of flatulent colic small doses of opium will relieve the pain, and often promote an evacuation. Suppositories, enemata, etc., are useful only temporarily.

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## THE CURABLE INSANE. WILL NEW YORK STATE DO ITS DUTY?

THE burning burden of disgrace laid by the laity upon the sufferers from mental disease is in very large measure responsible for the incurability of many cases of insanity.

The misapprehension and profound ignorance of our fellow citizens, who cannot see that disease of the brain is comparable to disease of any other part of the body, the liver, the lungs, or the kidney (a purely physical process), and hence perfectly capable of entire recovery and not a transgression which invites antipathy, is a determining factor in preventing many an insane person the means of recovery and of incapacitating him for a life of happiness and of usefulness.

Nowhere is that bitter struggle for existence seen in its most pitiable aspects than in the intolerant and unsympathetic attitude assumed by society at large to the sufferer from an attack of brain disease. This attitude, that brands a man for life as with the mark of Cain, is largely influential in preventing those with incipient mental trouble from seeking relief by treatment in hospitals at a time when treatment may be of service, and compels them to regard the sanatorium as a place of last resort, and then only is it sought when disordered mental function may have ruined forever a once brilliant mind.

Why should such things be? Social considerations alone are not responsible for all of this. The cumbersome, centuries-old machinery of the law is another factor in this vicious circle. The many, at times very important, legal restrictions are in other instances but a preventive measure in giving relief that such hospital treatment offers.

European countries have solved this problem; and, fortunately, through the activity of our present Commissioner in Lunacy, Dr. F. Peterson, it looks as though the way might be offered for New York State to take the lead in this country in the establishment of Psychopathic Hospitals for the treatment of the incipient insanities that in their early stages may be cured. It is to be most earnestly hoped that a way may be opened whereby a large number of the community may have hospitals fitted for their most crying needs.

## THE PLAGUE IN CALIFORNIA.

IN the issue of July 10, 1902, of the *Sacramento Bee*, the following interesting and remarkable statement is made:

"The *Bee* to-day begins the publication of a comprehensive history of bubonic plague in San Francisco, from its first detection, in March, 1900, down to the present period. The narrative is divided into three sections, of which the second and third will appear to-morrow and the day following. As a whole the story is one of remarkable interest, and is believed to be without a parallel in the record of pestilential diseases in this country. What has made it most remarkable is the systematic and pernicious effort to conceal and deny the truth, on the part of Governor Gage and his satellites, the reorganized State Board of Health, the daily press of San Francisco, its commercial bodies and the present Mayor of that city. The folly and futility of short-sighted attempts to suppress the facts are clearly exposed in this recital."

Following this broadside attack there is published in three instalments in the issues of July 10, 11, and 12 a recital which if true, even in its most general features, would merit the attention of the highest authorities in this country.

Many of the details leading to the actual knowledge of the presence of plague are known to the readers of the MEDICAL NEWS, inasmuch as they, from time to time, have been presented;

but of the inner history of the attempts by the Governor of the State of California to suppress all knowledge of the plague in the State but few are aware. These are told in unmistakable language in the issues of the *Sacramento Bee* just cited and bear the unmistakable evidences of thoroughness and of fair dealing.

There would seem to have been injected into the San Francisco plague situation a most rascally and despicable bit of machine politics, the which might have endangered many lives in that community, and further might have proved a source of menace to the citizens of this country from ocean to ocean.

The conduct of Drs. Kinyoun, White, Ryfkogel and the work of the Commission of Drs. Flexner, Barker and Novy stand out as examples of singular devotion to the cause of scientific truth, while the attitude of the Mayor of San Francisco would seem to merit the severest condemnation.

The stand taken by the Japanese in San Francisco as outlined in this present account is full of inspiration, seemingly caught from the example of the discoverer of the plague bacillus, Dr. Kitasato, one of their number. They deprecated the suggestions made by the State Health Department and gave orders to their fellow-countrymen to avoid Chinatown and to report immediately to a physician as soon as they were ill, and they further encouraged the use of the anti-plague serum.

Plague is still present in San Francisco, says the *Bee*, and the report here briefly alluded to merits the attention of our national sanitarians, the Public Health Service.

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### SEROUS PLEURISIES.

THE origin, nature, and diagnosis of the so-called primary serous pleurisies are matters of very vital interest to the practitioner, as is evidenced by the vast amount of literature devoted to them in the current journals.

The chief point at issue is the relation borne by the disease, or the symptoms, to tuberculosis, and upon this point it seems impossible to reach anything like unanimity of opinion. Clinically, the condition is well differentiated from even the more obscure cases of secondary tuberculous pleurisies; its origin is generally rather acute; it does not tend to recur if evacuated; it has not the marked cyto-diagnostic characters of the latter condition. Nevertheless, in the opinion of many observers the great majority of cases of acute pleurisies are in reality expressions of a tuberculous infection. Osler, in his last edition (p. 666) says: "I confess that the more carefully I have studied the question, the larger does the proportion appear to be of primary pleurisies of tuberculous origin." On the other hand, it is remarkable that Cornet in his great book on tuberculosis hardly considers the theory worthy of serious attention.

The question is certainly one very difficult to approach. Bacteriological examination, though negative, does not exclude the possibility of tuberculosis. Dr. Cabot has recently made a most valuable, and perhaps decisive, contribution to the debated point. He made the attempt to determine the subsequent history in 300 cases of pleurisy "in which there was good evidence for believing that a serous pleurisy was present, but in which there was no evidence of tuberculosis, either in the lung or in other organs." His results were almost startling. He found that eighty per cent. of the patients were apparently well at the end of five years or more, half of this number having been followed for at least ten years. Fifteen per cent. sooner or later developed demonstrable tuberculosis of lung or bone, but in only three per cent. was this tuberculosis manifested within two years after the pleurisy. Cabot himself states expressly that he has attempted to determine only the prognosis and not the character of serous pleurisies. Nevertheless, his figures furnish the most powerful argument as yet accessible against the theory of the tuberculous character of the disease.

It may be confidently asserted that the proportion of cases in which tuberculosis followed the pleurisy does not exceed that which would be found to follow any disease distinctly non-tuberculous in character. On the other hand, it falls far below the proportion of cases in which every form of tuberculosis with which we have up to the present time become acquainted continues to give marked symptoms perhaps for years, with an eventual fatal outcome. The evidence is indirect, but in so far as statistics can prove anything, it is conclusive.

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## ECHOES AND NEWS.

### NEW YORK.

**Loomis Sanitarium Physician.**—Dr. Herbert M. King of Grand Rapids, Michigan, has been appointed physician in charge of the Loomis Sanitarium at Liberty, N. Y. Dr. King's name is well known throughout the West for his writings and researches in pulmonary tuberculosis. He will bring to his appointment the skill and experience of an expert.

**An Unscrupulous Stenographer.**—There has been in this city for some time past a tall, thin woman who does medical stenography, who makes it a business to get advance loans from physicians for work to be done. She rarely returns after receiving the advances.

**The Barren Island Nuisance.**—The President of the Board of Health is reported to have said at a recent meeting that steps had been taken to abate the nuisance caused by odors from Barren Island. A general order was served on the President of the Sanitary Utilization Company, directing the company to abate the nuisance forthwith.

**Pure Mineral Waters.**—An amendment was adopted to section No. 202 of the Sanitary Code, at a recent meeting of the Health Board, providing that all manufacturers of mineral waters in the city, about 467 in number, must file with the Board of Health an analysis of their waters, together with the name, the place of manufacture, and the place from which the water is brought to this city. They will be obliged to secure a permit before continuing the manufacture of the waters. The amendment was the result of complaints to President Lederle that many of the waters sold in the city were unhealthy. Tests were made and it was found that the complaints were justified.

## PHILADELPHIA.

**Decrease in Death Rate.**—During the week ending July 19 there were reported 509 deaths, as against 570 the previous week. Six deaths were attributed to sunstroke. There were 13 new cases of smallpox and 3 deaths. Typhoid fever contributed 10 deaths, there being 63 new cases.

**Foreign Physician Visits Philadelphia.**—Dr. Thakur Bhowani Singh, physician to the Maharaja of Karauli, India, stopped here several days of last week while on a tour of the United States.

**Change of Diet for Inmates of Almshouse.**—A change in the diet of the inmates of the Philadelphia hospital made during the last ten days is said to leave no valid ground for the complaint of being underfed. Such complaints have heretofore been of rather frequent occurrence and not confined wholly to the almshouse, although being more persistent there. To determine the diet question a study has been made of the rations served in the United States army, and of the per capita quantity and the character of food supplied at the House of Correction, Moyamensing Prison, and other public institutions. From these data a diet schedule has been prepared, which, while in the nature of an experiment, meets with the approval of the physicians and the department of Charities and Corrections.

**Sand for Filter Beds.**—The Lower Roxborough filtration plant which the contractor agreed to have ready for operation ten months ago is still unfinished and the two sand beds, more recently promised, are not yet completed. Scarcity of sand is claimed by the contractors who say that the plant will be finished by September 1st, if the sand comes at its present rate of 500 tons daily. Statements that the specifications regarding sand are being disregarded were emphatically denied by the engineer in charge who said that from June 21st to July 9th, eleven out of thirty-seven carloads had been rejected as not up to the required standard.

**Dr. Browning's Award.**—The Pittsburg Orphan's Court has awarded Dr. Walter C. Browning of this city $29,239.25 for professional services rendered to the late Senator C. L. Magee. Dr. Browning's claim was for a total of $317,000, of which $190,000 was directly for services. The balance, according to the claim raised, was money, and its accrued earnings, which Mr. Magee is alleged to have invested for the physician out of gratitude. The principal question in court was the fees the alleged investment not receiving much attention. The case will probably be appealed as the verdict is not satisfactory to the plaintiff. The *Times* says that "possibly the physician's larger expectations were well based. But it is evident from his claim that they were based upon something else than the ordinary relations of physician and patient. As a compensation for purely professional services, the most prosperous surgeon would probably regard the court's award as adequate. Debts of friendship or gratitude, however valid, cannot be collected at law unless they have been acknowledged in a binding contract. Dr. Browning's mistake was in not turning Mr. Magee's promises into cash or having them put in writing. In waiting for them to accumulate he took the risk of what happened; his patient died before his expectations were realized. For these reasons it appears likely that the judgment of the Orphan's Court will stand."

**Rush Hospital.**—Dr. A. M. Rothrock has been appointed visiting physician to the country branch of the Rush hospital for the treatment of consumption and allied diseases, recently opened near Malvern, Pa.

**Government May Object to Municipal Hospital Site.**—The citizens of the Fortieth Ward may be aided in their fight against the Cannon Ball Farm as a site for the municipal hospital by the United States government. Should the petitions and protests of the people fail it is said that objections will be made on account of the proximity of the site to League Island navy yard. Drainage would be carried to that property and the danger of transmission of contagion by mosquitoes is also feared.

**Negro Population Increasing.**—The steady northern migration of negroes is fast increasing the colored population of this city. Reliable statisticians say that if the present rate of increase continues the end of the next decade will see Philadelphia the center of greatest density of the national negro population. Colonies are being formed in the suburbs as the older settlements are entirely inadequate. In 1870 there were 22,147 negroes in this city; in 1880, 31,699; in 1890, 39,371; in 1900, 62,613, and the annual immigration is estimated at 5,000. Lately hundreds of negro laborers were brought here to work on the new filtration plants.

**Beer Consumption in Philadelphia.**—From statements made to license courts by the brewers of this city it appears that the annual output of beer is over 2,000,000 barrels, an increase of 200,000 barrels in one year. The exports are believed to be equaled by the imports. One of the daily papers, in commenting on the apparent increase in consumption of this beverage, says that this means something like two barrels annually for each man, woman and child in the city. There is not a doubt that beer is used increasingly by growing numbers of men. "The consumption of so mild a tipple undoubtedly and demonstrably checks the inroads of stronger liquors which produce drunkenness, and temperate living in this country as in Germany is encouraged by the popular fondness for beer. All but a few of the most fanatical advocates of total abstinence will find satisfaction in the thought that more beer is being brewed and consumed in America."

**Philadelphia Vacant Lots Cultivation Association.**—In a recent published letter the Superintendent of this Association calls attention to some facts regarding its work and possibilities. There are thousands of people willing to cultivate these lots, at least 2,000 families wishing facilities each season. The difficulties are the procuring of suitable land in accessible locations and the payment of the necessary force of overseers. For an outlay of $12,000 to $15,000 he states that $100,000

to $150,000 annually might be realized, to say nothing of the improved health of the persons thus engaged, the reduction of the unemployed classes, etc. The work of this association which has proven so successful undoubtedly has greater possibilities.

## CHICAGO.

**First Aid Instruction.**—Dr. John E. Owens, Chief of the surgical department of the Chicago and Northwestern Railway, has inaugurated a system whereby all of the conductors, engineers, firemen and brakemen are to be familiarized with the principles of first aid to the injured. These employes will each be furnished with a kit of necessary materials for dressing wounds. On each train, freight as well as passenger, large kits of simple but necessary surgical instruments, bandages, antiseptic dressings, and remedies will be placed, so that in the event of a wreck or serious accident immediate treatment can be given to the injured.

**Scarlet Fever.**—This disease is declared epidemic in the region bounded by State, Halsted, Forty-seventh and Fifty-fifth streets, and reports of deaths are beginning to reach the health department. The carelessness of parents in exposing their children to the disease amazes the health officials. It is reported that it is not uncommon to find women carrying one child and leading another by the hand, visiting others in whose families scarlet fever is raging. One physician who saw a case of this kind remonstrated, and was told: "We are not afraid of scarlet fever."

**Chicago Lying-in Hospital.**—The Trustees of this Hospital have completed the $10,000 building fund necessary to secure the $5,000 donation of Abraham Slimmer. The plans for the erection of the new building are already under preparation.

**St. Luke's Society Officials Set Free.**—On July 2 the grand jury voted a no-bill in the case of the President and Secretary of the St. Luke's Society. By this action of the grand jury they are relieved of all responsibility for the disastrous fire which occurred June 9th, and resulted in the loss of twelve lives.

**Illness of Dr. Simmons.**—Dr. George H. Simmons, Editor of the *Journal of the American Medical Association*, recently underwent an operation for gall-stone disease. The operation was performed by Dr. M. L. Harris, of this city. A gall stone, about the size of a hazelnut, was found at the entrance of the cystic duct. The stone acted in the nature of a ball-valve, such as the late Dr. Christian Fenger described in his elaborate monograph on "Diseases of the Gall Bladder." The readers of the MEDICAL NEWS will be gratified to learn that Dr. Simmons is recovering rapidly.

## GENERAL.

**Cholera in the Philippines Decreasing.**—Cholera continues to decrease in the city and provinces. The authorities think the epidemic is also less virulent.

**Consolidation of Southern Medical Journals.**—The Atlanta Medical and Surgical Journal and the Southern Medical Record have been consolidated to make the Atlanta Journal-Record of Medicine.

**New Medical Research Laboratory in the Far East.**—According to the Lancet the Government of the Federated Malay States has established in Kuala Lumpur, the capital, a research institute which is open to all. The medical department is exceptionally well equipped. The laboratory is under the direction of Hamilton Wright, M.D., of McGill.

**New Army Surgeon-General.**—The President has designated Col. Robert M. O'Reilly to be Surgeon-General of the Army, to succeed Gen. William H. Forwood, who will retire on September 7 next. Col. O'Reilly will have until January, 1909, to serve as Surgeon-General. He was appointed from Pennsylvania as a medical cadet in 1864, and is a graduate of the medical department of the University of Pennsylvania.

**Healthfulness of the West.**—The town of Ellsworth, Wis., population 1,500, was the healthiest place in the United States in 1901. Only two persons in the town died and one of these deaths was from smallpox, an uncommon disease in Ellsworth. The Marine Hospital Service has compiled the official reports for last year from 1,435 cities and towns having a population of 1,000 or more. These reports seem to show that if one would enjoy the most favorable conditions for health one should live in Iowa, the mortality in that State last year being at the rate of only 9.20 per 1,000 of population. Two or three other States, according to the official record, look more promising, but it has to be considered that in these only a few small towns and none of the large cities reported. For example, North Dakota, according to this incomplete record had a death rate of only 5.17, Oregon of 7.60; South Dakota of 8.20, and Arizona of 3.33. The middle Western States had a far better health record than those of the East and the far Western better, as a rule, than the middle Western. In Louisiana, as usual, the death rate was highest, 20.65, but the neighboring State of Arkansas had a record of 10.6 per cent. The most unhealthy large city in the United States was Charleston, S.C., death rate, 29.11. Laredo, with a population of 13,429, had a mortality of 36 per 1,000. Here is the record per 1,000 for some of the great cities of the country: New York 20, Boston 19.70, Philadelphia 18.27, Baltimore 20.23, Washington 21.14, New Orleans 21.44, Cincinnati 18.88, Chicago 13.88, St. Louis 17.67, San Francisco 19.34.

**Need for Negro Physicians.**—The Evening Post quotes from a recent article in the Chicago Record-Herald, in which President J. G. Merrill of Fisk University calls attention to the growing need of trained negro physicians and ministers. In many parts of the South the colored man has quite outgrown the old type of negro preacher, and there are no places where he does not need in his pastor a social guide and educator ready to direct the forward movement of the race. It is not generally known in the North that Southern white ministers, at least in many sections, decline to marry negroes. In one case a negro couple desirous of being married in an Episcopal church were only able to do so by passing themselves off for white persons after a long journey to a city in which they were not known. The negro doctor, as President Merrill points out, has "an amazing opportunity" among the eight millions of his race, inasmuch as the black man turns to a physician of his own color as readily as the white physician in the South turns away from colored patients whenever he can honorably do so. President Merrill was able to tell of the success of twelve negro doctors in Nashville, all doing well financially, and half of them amassing property. He reports also that it is easier for a colored physician to build up a self-supporting practice than for the white doctor. The necessity of good medical schools for negroes should be plain to all, even to those who doubt the wisdom of higher education in the classics and natural sciences. New York city would benefit if there were more competent and professionally high-minded colored doctors within its limits to do missionary work in its "colored quarters."

**Obituary.**—Dr. Abram Mills Fanning died suddenly of heart trouble, resulting from acute indigestion, at his residence on Sunday afternoon. He was born in this city in 1863 and was a graduate of the College of Physicians and Surgeons, in the class of 1886.

Dr. Edward L. Parker, 26 years old, who was attached to the Long Island State Hospital at Kings Park, Long Island, was found drowned at Sea Gate, Coney Island, last week. Dr. Parker was a graduate of Yale and had been at the Long Island State Hospital four years.

Dr. Joseph Biddle Wilkinson, one of the oldest and best-known physicians in Louisiana, died in New Orleans last week, aged 85. He was a grandson of Gen. James Wilkinson, former Commander-in-Chief of the United States Army and the Commissioner who received Louisiana after its purchase from France. Dr. Wilkinson was a member of the Louisiana Legislature for years and a member of the Secession Convention of 1861 which took Louisiana out of the Union. He leaves seven sons, nearly all of whom have achieved some distinction. J. B. Wilkinson, Jr., was a member of the United States Board of Appraisers at New York, Theodore S. Wilkinson, Collector of Customs at New Orleans and member of Congress, and Dr. C. P. Wilkinson, President of the Louisiana State Board of Health.

Dr. Thomas Henry Hoskins, who has just died in Newport, Vt., was prominent in Vermont for thirty years, but his native place was Gardiner, Me., where he was born in 1828. When twenty-one he started for the gold fields of California, but stopped at Louisville, Ky., where he entered a drug store. He studied medicine in the then celebrated medical school of that city, while carrying on a market garden near Louisville. After graduating he remained as Assistant Professor of Anatomy, translated French and German works for the University of Louisville, and practised his profession until in 1861, when he removed to Boston. Then he became surgeon to several institutions, a lecturer in Dr. Dio Lewis' school, and an editorial writer on a Boston paper.

Dr. James Elliott Dwinelle was found dead at his home in Baltimore, July 18. He had been stricken with heart disease during the night. Dr. Dwinelle was born in Cazenovia, Madison County, N. Y., in 1830, and was the son of the late George Justin Dwinelle of New York. He was of Huguenot extraction, his ancestors having left France twenty years before the massacre of St. Bartholomew. Dr. Dwinelle received his medical degree from Jefferson College, Philadelphia.

## SOCIETY PROCEEDINGS.

### AMERICAN SURGICAL ASSOCIATION.

*Twenty-second Annual Meeting, Held at Albany, June 3, 4, and 5, 1902.*

FIRST DAY—JUNE 3D.

The Association was called to order in the Senate Chamber by the President, Dr. DeForest Willard.

**Presidential Address.**—Dr. Willard thanked the members for the great honor bestowed upon him and said he very cordially agreed with the man who had said he would rather be elected a Fellow of the American Surgical Association than be made President of the American Medical. He devoted the greater part of his short address to sketching the condition of surgery at the time of the founding of the Association twenty-one years ago, when celiotomy was young and asepsis almost in its infancy. His quotations from the first issued volume showed that a majority of the founders were exceedingly skeptical in regard to the assertions of Lister concerning micro-organisms. Some of the exceptions taken to the new teaching were laughably vehement, but Dr. Willard reminded the smiling Fellows that excerpts from to-day's transactions will probably be just as laughable twenty years hence. In closing, he urged the importance of strenuously guarding the door of entrance to the Association. The elder Gross and other founders always insisted that only those peculiarly fitted should be accorded the privilege of membership. Fellowship must remain one of the prizes for American surgeons to strive for. The Association has lost during the year, Sir William MacCormac, and Drs. E. M. Moore, Christian Fenger, Levi C. Lane, and Clayton Parkhill.

**Report of a Successful Case of Gunshot Wound of Stomach and Liver with Posterior Drainage.**—Dr. Roswell Park of Buffalo said that he saw and operated upon this case one hour and a half after the infliction of the injury. It was made by a revolver bullet in the mid-line just an inch above the tip of the xyphoid. This bone was shattered and when, by a double incision the whole wound area was incised, the abdominal cavity was found full of clots and detritus. With his hand he scooped out more than two quarts and was then able to make an examination of the parts. The left lobe of the liver was deeply cut; the stomach was perforated but fortunately had been comparatively empty; it was therefore not washed and the wounds were closed by triple sutures. No search was made for the bullet, it having been shown that such efforts are worse than useless. Posterior drainage was then established through an incision just below the twelfth rib and a tube was passed into the lesser peritoneal cavity. Recovery was uninterrupted and complete.

**The Importance of Drainage in Bullet Wounds of Intraperitoneal Viscera.**—Dr. L. M. Tiffany of Baltimore cited two cases in each of which the injury was extensive and the shock profound. One had nine wounds of the lesser gut made by a small pistol bullet, the other had perforations of both liver and stomach due to a similar cause. So-called "civil" bullet wounds are infected. They differ from the injuries inflicted by the modern military small arm and there is no sense in considering their treatment under the same head. Whatever may be true of the latter, every abdominal wound made in civil life should be drained, and sterile gauze is the best agent. The hollow viscera are full of infectious matter; their walls are thin and their shapes vary; they are almost like a honeycomb; it is not possible for a bullet to traverse the cavity of the abdomen and remain clean. From the moment of making the first visceral perforation the bullet is a lethal agent. Drainage should therefore be free and the most important point in connection with it is that the direction must be from *within out*. Dry peritoneal toilet without any flushing whatsoever is the first step. The second is free and full venous infusion. If the capillaries and arterioles are overdistended, they will pour clean water out in great quantities on the peritoneal surface. He recommended 1,500 to 2,000 c.c. normal salt solution intravenously during the operation and 1,000 c.c. every six hours for several days thereafter. The prognosis is good no matter how grave the injury, or how profound the infection so soon as free drainage is established.

**A Report of a Case of Gunshot Wound of the Spinal Cord.**—Dr. R. H. Harte of Philadelphia said that he had not been able to find any record of successful suture of the spinal cord in man or in the higher vertebrates. In numerous instances it has been done with total recovery of function in frogs and in certain reptiles. The case in point was not one upon which he himself had operated; this good fortune had fallen to his assistant, Dr. F. T. Stewart of the Pennsylvania

Hospital. The patient, a woman twenty-six years of age, had been shot twice with a small revolver, the bullets entering in the neighborhood of the seventh dorsal. Paralysis was complete below the tenth spine and from three and a half inches below the umbilicus. Three hours after the injury Dr. Stewart removed the right laminæ of the seventh and eighth vertebræ. The cord was severed and retracted three-quarters of an inch; the bullets were found in this space. The cord was approximated by three sutures; the membranes having been destroyed, no use of them could be made. On the fifth day there was pain in the right knee and the surface anesthesia had begun to travel downward. From that time to the present, some fifteen months, the improvement has been gradual, though slow. She has now a fair control of bowel and bladder. The menses appeared at the seventh month and have since been normal. Early operation is indicated by this remarkable case just as certainly, and for virtually the same indications in vertebral injury as in cranial injuries. There is absolutely no mode of telling whether a given case is suffering from concussion, contusion or laceration, save by exploration.

**Drainage.**—Dr. Rodman of Philadelphia said that the President must have borne in mind the fact of his having come from Kentucky. He had seen a good deal of civil bullet injury both there and in Philadelphia. It had taught the very great value of drainage. He felt that every abdominal bullet wound should be treated as though it were septic.

**Experience Gained in Late Wars.**—Reports show that the teaching in regard to the relation between hematemesis and gastric perforation has been fallacious. It is not pathognomonic of perforation, the impact of the blow in the region of the stomach being sufficient to cause it. Save with a few possible exceptions which no one can determine in advance, all bullets leave a septic trail. In the treatment of gastric wounds the lesser peritoneum should always be drained from the rear, preferably, and through a glass tube filled with gauze. As time is a most important factor, searching for the bullet is not to be thought of. Abernathy once said of a famous surgeon who operated on Sir R. Abercrombie when a bullet had lodged in his thigh, "Gentlemen, he groped and he groped and he groped, and Sir Robert died."

Dr. Carson of St. Louis wished to be put on record as strongly opposed to flushing of the abdomen. He never had had a single case terminate successfully. He commended the posterior drainage in addition to the anterior, because he felt that the vast majority of these wounds were septic.

Dr. Nancrede of Ann Arbor said that it was much to be regretted that in at least one-half of the text-books of to-day the influence of the reports of the Civil War were still so much in evidence. Instead of teaching to-day what recent wars have shown to be true the fallacious statements gleaned from '61 are still adhered to. Hundreds of cases in the recent wars have shown that the great joint cavities can be opened by the modern military missile without the subsequent disability resulting, leaving out of consideration the question of death-rate. In '61 this was 98 per cent.; it is now between 2 and 3 per cent. The modern bullet is aseptic; this is due largely to the absence of grease and wax with which the older bullets were coated.

Admirable results have been obtained from simple fixation and extension for a week or ten days, combined with subsequent mild passive motion. There must be sweeping modifications in the treating of joint injuries by bullets, one of the most important being that if the operator keeps his fingers and probes out of the joint wound, the prognosis is almost invariably good.

Dr. Bell of Montreal had conducted a number of experiments on dogs and other high vertebrates with a view to learning definitely whether the cut spinal column can be functionally restored by suturing. He never succeeded. In the first place he found the utmost difficulty in the technic; his sutures were very prone to tear out, and he found that if any portion of the cord had been resected it was very difficult to unite it because the cord is of a different structure from mere nerve. He had supposed that its great systems of ganglionic cells were the factor which had prevented the successful reestablishment of function. He was glad, however, to be shown that this was a purely theoretical assumption.

Dr. Macdonald of Albany said that what he had heard and what he knew from his own experience had taught him that there are three distinct types of gunshot wounds which cannot well be discussed together; they are the so-called civil wound, made by the ordinary revolver or shotgun, the modern military wound, and the old-fashioned military wound.

Dr. Estes of South Bethlehem said that because of the trajectory of conical slugs the wound of entrance may be much larger than that through the viscera. Of course the inverse of this may be true. He emphasized the importance of posterior drainage.

Dr. Weeks of Portland believed that there are cases of visceral gunshot wounds in which no drainage is necessary. These are those in which there has been little or no extravasation. Posterior drainage he could not commend. One important factor in establishing a successful gauze drain is that the drain and the first compress should be saturated before applying them. Such drains work admirably for serum, but tubes are necessary for the removal of pus.

Dr. Vander Veer had seen many abdominal wounds in '61. The only occasion on which they ventured then to operate on these cases was when the abdominal wall was so torn away that the viscera protruded. They were then put back in a crude sort of fashion, but every one of the patients died. He endorsed what Dr. Nancrede had said as to the wounds of great joints in the wars of to-day. Shortly after the battle of San Juan an officer who had been shot through the hip, only about three weeks before, called at his office; the primary dressings which had been applied on the field were still upon the wound, and when these were removed the healing was found to be complete and the function almost perfect. In '61 this case would have almost certainly died in forty-eight hours.

Dr. Owens of Chicago felt that in abdominal injury each case must be decided for itself; so far as he could remember posterior drainage had not formerly been insisted upon; he believed it to be a step in advance both because gravity assists and because it is well known that rupture is favored by the establishment of anterior drainage.

Dr. Abbé of New York said that functional restoration of the divided nerves is very rare; it is most difficult therefore to understand the physiology of Dr. Harte's most remarkable case. As to the technic of suturing the cord, he believed that in many cases it would be necessary to resect a portion of the body of the vertebra if the cord destruction had been at all great.

Dr. Park said that Harte's case violated all clinical and laboratory traditions; he cited a case of spinal respiration which seemed very extraordinary. During the progress of a high laminectomy, he was astounded to find that the man, who had been wounded

by the bullet's passing through his lungs, was breathing through his back like an insect.

Dr. Tiffany said that posterior drainage would occasionally open the pleural cavity because of the obliquity of the diaphragm. It therefore seemed to him undesirable, except perhaps under certain conditions; the gauze drainage kept in active flowing by this method of infusion needed no changing until the patient was out of the woods.

Dr. Harte said that in consideration of abdominal wounds, no human being could tell without operation whether they had penetrated a viscus or not, and there was no possible way of finding out whether infection had taken place or not. Posterior drainage, while good, in his opinion might often be unnecessary. The abdominal wound, however, should certainly not be too tightly closed. The size of the gauze, if such drainage be used, is important; it must be large and it must go deep. He agreed with Dr. Tiffany in the matter of not changing it early.

**Removal of the Prostate and Bladder Through Suprapubic Incision for Carcinoma.**—Dr. M. L. Harris of Chicago gave a detailed account of the technic which he had used on a difficult case in a man fifty-three years of age. The salient features of his technic were, first, the suprapubic incision and working outside the capsule; the division of the urethra at the triangular ligament; the reduction of hemorrhage by upward traction; the saving of a portion of the bladder mucous membrane, into which to transplant the ureters. It was remarkable, he said, the extent to which the bladder mucous membrane will regenerate and stretch itself; in two months from a very small and seemingly hopelessly injured, newly-made bladder, this patient had made for himself a very serviceable viscus, which would retain from four to five ounces of urine without difficulty.

**Anatomical and Technical Reasons why the Perineal is Preferable to the Suprapubic Route in Prostatic Surgery.**—Dr. J. E. Moore of Minneapolis said that the establishment of catheter-life nowadays is a disgrace to any surgeon. The prospects of an immediate death or even a serious break-down should not be the first indications, as they are now in too many cases, for surgical interference. The perineal route is tne operation of the future; this conclusion has been forced upon him partly by study of the parts, partly by the extraordinary success which had attended his efforts at massage in treating the prostate. He had been astounded at the ease with which this manipulation could be accomplished by the use of a simple curved sound, and it was a simple step from this to using the sound in radical removal. Inasmuch as the function of the prostate is generative rather than urinary, it seems clear that those who have urinary obstruction after prostatic removal have it because of physical injury. Another indication favoring the perineal route is that the distance from this region to the prostate is but one half that from the prostate to the suprapubic surface. He always uses the median incision; a complete excision of the prostate is not often indicated. The isthmus should be left, and if the lateral lobes are so large that the simple median incision does not afford room enough, an incision which passes down only to the perineal muscle may be made.

**Permanent Suprapubic Drainage in Tuberculosis of the Bladder.**—Dr. Charles A. Powers of Denver gave a series of notes on a case in which he had established this form of drainage in 1895. It had been characterized by the most gratifying success. The man had suffered from vesical tuberculosis for several years prior to operation, all local treatment having failed. It is probable that, this is the form of treatment for the great majority of these cases, because they illustrate the simple surgical truth that wounded areas must be placed at rest.

Dr. Ransohoff of Cincinnati spoke on the use of the curvilinear prerectal incision for abscess of the prostate gland. He said that prostatic abscess of the parenchyma is relatively rare and is consequently often overlooked. It may, however, assume a latent form of very great danger. In many of the patients treated through the rectum a sinus is established which it is hopeless to try to heal. There is no difficulty in getting the prostate out by the use of an ordinary stone-searcher. To be sure the median incision is bloodless, but if it be remembered that the only vessels cut in the curved incision are the superficial branches of the pudic, which are in no way difficult of seizing, it is free from the dangers of injuring the bulb, which may be cut in the median incision.

Dr. Eliot of Boston said that it was useless to remove the middle lobe alone; the operation must be radical. The bimanual method was most excellent, but on the whole in the majority of cases the perineal route is more safe.

Dr. Weir of New York said that in connection with Dr. Harris's statement as to the regenerative power of the bladder, he remembered a number of cases in which useful organs had developed after operations in which the case seemed absolutely hopeless. He supported Dr. Powers in the belief that suprapubic drainage was necessary to the cure of chronic vesical tuberculosis. Ten years ago he had a similar case. He further commended the semi-lunar incision of Dr. Ransohoff.

Dr. Ochsner of Chicago said that until six months ago he had used the combined incision; but that now all his work was done through the perineum alone. He urged the use of the curved incision. It causes more hemorrhage from the superficial cut, but the operation area is so much enlarged as to justify its use.

Dr. Finney of Baltimore said it seemed strange to him in that the discussion of prostatic treatments nothing had been said of the Bottini. On the basis of Dr. Young's report, soon to be made from Johns Hopkins, of fifty cases in which this operation had been done, he assured the Association that in competent hands the Bottini would be the operation of the future, and that prostatectomy in all its modifications would be set aside.

Dr. Abbe said that the keeping of patients dry after suprapubic drainage was not such a bugbear as many seemed to think. The operation could readily be done under cocaine, and the important point in the technic, from his standpoint, was the inversion of the bladder mucous membrane; it is the pouting of this which causes the urinary leakage around the tube. He then demonstrated a simple urinal which, when suspended from the waist, gives a very satisfactory result.

Dr. Moore, in closing, said that the development of prostatectomy had been most remarkable; the discussion had shown him that it is not so much the position of the incision, but the man who makes it, some operators no doubt doing better work through the median, some through the curvilinear. As this operation becomes freed from danger, which it will, the patients on whom it is done will grow as a class younger, and it will then be necessary to devise a technic for the preservation of the seminal ducts. This he believed he had been able to accomplish in one case.

**Abdominal Hysterectomy.**—Dr. John P. Deaver of Philadelphia said that myomectomy is only indicated in the rarest cases. Supravaginal amputation

is unquestionably the best operation, as it does not interfere with the anatomy of the vagina. This is important because it tends to diminish the danger of displacements. Furthermore, by it, there can be preserved to the woman every function save that of childbearing. Every effort should be made to do conservative surgery in this type of case, because of the remote effects of total extirpation which are only of recent years beginning to be studied.

**Fatal Acetonuria Following an Operation for Appendicitis.**—Dr. G. E. Brewer of New York gave the details of this remarkable case; it was that of a school-boy aged twelve, upon whom he had operated for appendicitis forty-eight hours after the beginning of the symptoms. Chloroform was the anesthetic used, and in every conceivable manner the operation and the reaction of the patient were entirely in accord with the usual routine. For the first two and a half days the recovery seemed certain; a pus cavity had been evacuated, and the temperature and pulse had, at the end of the second day, become normal. On the third day the urine, which previously had been normal, began to show traces of albumin and casts. On the fourth day, in the middle of the night, the mother, who was sleeping in an adjoining room, was awakened by an agonizing cry, which brought her rushing to the bedside; there was every evidence on the lad's face of the most profound and acute mental agony; for a few moments he recognized no one; shortly, however, this condition passed away and he fell into a natural sleep. The following morning there was another seizure somewhat worse than the preceding, and the sleep into which he passed after it bordered on coma. A most careful physical examination made with the aid of experienced consultants failed to reveal the slightest cause for this condition. By a process of exclusion, all possible conditions which might provoke it were set aside. Meantime during the day the attacks became more frequent, more violent and more agonizing, and the intervals were marked by a gradually deepening coma. On the fifth day a sweet odor in the breath was noticed for the first time, which suggested the presence of acetone. The consultants, however, said that no acetone had ever been observed in a case not complicated by diabetes. Every kind of cathartic was used and on the advice of Dr. Evan Evans saline infusions and injections of every kind were tried, but without avail. The coma deepened, and without at any time giving any physical signs of what was causing it, death occurred. The salient points in this interesting case are, first, the septic focus; second, apparent improvement, as evidenced by charts, etc.; third, in the midst of this a maniacal delirium, coma and death within thirty-two hours from onset. Acetone had been fully discussed in diabetes, where, under certain conditions, it is quite prone to appear, patients dying from it, as shown by the researches of Herter, probably succumbing to a true $CO_3$ poisoning which is induced by the acetone reducing the normal alkalinity of the blood to such extent that is cannot take up the $CO_2$ of the tissues.

SECOND DAY—JUNE 4TH.

**Supravaginal Hysterectomy from a Technical Standpoint.**—Dr. W. G. Macdonald said that there were many conditions of tumor formation in the female pelvis which had been operated on altogether too indiscriminately in the past. If these caused no symptoms, in many cases there was no reason for attacking them. He preferred the abdominal mode of attack particularly in those cases which have been incised from the vagina for drainage, or in which abscess cavities had ruptured into the bladder, vagina or rectum. The surgical profession had shown a retrogression when they rejected the original technic of Kimball, which was supravaginal, and adopted the lower operation. The vast numbers of grotesque clamps and togs which had been devised for the furtherance of this operation showed the truth of his assertion. He said that Kelly's technic of splitting the uterus, especially when complicated by incarcerated fibroids, was of the utmost value. He showed numerous sketches which demonstrated a modification of this method which had given him admirable results.

**Myomectomy vs. Hysterectomy.**—Dr. A. J. McCosh of New York said that gynecology had been peculiarly unprogressive in its efforts to preserve the uterus and its appendages. Save those fibroids which endanger the woman's life, all should be removed by myomectomy. Whereas about six years ago the proportion of the statistics in his private and hospital practice stood about one to five, to-day he does the first operation fully twice as often as he does the second. It does not matter what the position, or the size, or the number of the fibroids may be, it is in his experience always amenable to removal. He splits the uterus from fundus to cervix and divulses the tumor as rapidly as possible; this is the only important part of the technic, for by it the hemorrhage is minimized. The remaining uterus is, in pronounced cases, a very wretched and ragged-looking organ; Nature, however, will take care of it and reestablish its childbearing function, as he has had occasion three times to observe, after it had been trimmed down and reunited. Thirty-two of his cases have had the menstrual function reestablished, and in twenty-seven of them it has been abolutely normal. In conclusion he said that myomectomy is almost always the operation of preference in young women; there is no great danger from the operation if the strictest asepsis be maintained; with speedy divulsion there is no fear of hemorrhage.

**Choice Between the Suprapubic and Infrapubic Methods of Reaching Tumors and Other Surgical Lesions of the Pelvic Organs.**—Dr. M. H. Richardson of Boston said that perhaps he was in no position to criticize the vaginal route inasmuch as he had followed its technic in only about one-half of one per cent. of his cases. Experience, feasibility, anatomy and pathology were the points which determined an operator in choosing between them. The second factor must indeed be great to warrant one in taking the vaginal route. Perhaps the most important indication for this latter technic is in operation on cases in which there has been profound hemorrhage, when shock is established and the patient's life jeopardized by the superior operation.

**Abdominal Route for Approaching Rectal Tumors.**—Dr. Robert Abbe said that before any surgeon could afford to decide what sort of operation he would do there were many minor questions of great importance to be settled, such as the desirability of switching the contents of the gut through an inguinal colostomy, or the ligation of the internal iliacs, as has been proposed by some Frenchman. He gave the anatomy of the rectum in detail, and stated that two-thirds of the malignant forms are found below the attachment of the peritoneum. Kraske's operation has many valuable points in its favor, but it is recognizedly bloody and dangerous from the point of view of sepsis as well as hemorrhage, and in addition a great objection to it is that the surgeon may be tempted to cut the gut too near the neoplasm in his efforts to unite the segments. Simple section of the peritoneum does not afford space, in his opinion, to do a radical operation; he advocated a combined operation; the abdomi-

nal, plus the sacral or perineal. He makes a permanent inguinal colostomy and then, placing a purse-string suture around the gut above and below the growth, cuts it and invaginates the ends; this gives an absolutely clean operation area and a roomy one. In closing he said that all operations for cancer of the rectum must necessarily be more or less elective; the perineal being in general indicated for those very low down, the Kraske for the moderately malignant types not situated too high, and the combined operation for those very malignant tumors which are too frequently found high up.

Dr. Eliot of Boston said that in his last seventy-four cases he had but two deaths; this seemed to him to justify the incursion of the general surgeon into a so-called specialty. Kelly's operation of splitting the uterus, which had been endorsed by Macdonald, had its marked advantages, but he feared that occasionally there might be danger of septic infection from its soiled interior. The supravaginal route seemed to him the one of choice; in five cases he had operated vaginally and then opened the abdomen and looked at his results; in each instance a grave omission or commission was discovered.

Dr. Allen of Cleveland said that the attack on the vaginal work had been too sweeping; there were many indications for the use of this path where good and rapid surgery could surely be done. Malignant growths of the cervix, for instance, which had involved the vault, were seen much better through the vagina than from above.

Dr. Vander Veer had done all kinds of operations on the uterus; as each one had had its day and had passed, he had practised it. He objected to the splitting of the uterus because of the possibility of infection, and because there were few growths which he had not been able to remove without it.

Dr. Mayo of Rochester said that for non-malignant cases the most conservative surgery should be used; his experience with the malign growths, save in cases of carcinoma of the body of the uterus, had been very unfortunate; despite the resection of the lumbar glands, all his cases had died. Probably this was because of violation of the law that removal of malign growths should include ¾ cm. of healthy tissue. This cannot be done in cases of carcinoma of the cervix.

Dr. Bevan of Chicago made a strong plea for Kraske's operation and would limit the combined technic to special cases. The question of the position of the artificial anus is largely one which should be left with the patient, inasmuch as all of this work is at best palliative.

Dr. Eliot of New York said that the gloomy outlook in most cases of malignancy was due to their advanced condition at the time of surgical intervention. He insisted that in every case the lumbar glands should be removed whether they showed the gross evidences of infection or not, because without doubt microscopical section would show them to be diseased.

Dr. McDonald said that the general surgeon is at last coming to his natural heritage. The gynecologist will soon be a thing of the past. There will be somewhat higher mortality, probably, with myomectomy than with hysterectomy, as Dr. McCosh's figures seem to indicate; nevertheless, because of the extraordinary advantages offered by it, it is the coming operation.

Dr. McCosh said that if cancerous glands are in the broad ligament, the case is hopeless and had better be left alone. Of twenty-nine examinations for pyogenic germs in the endometria of his myomectomy operations, twenty-eight proved negative; there does not, therefore, seem to be much danger of sepsis.

Dr. Richardson said that he was surprised to find any one who used the vaginal technic. The very greatest care should be taken not to infect denuded surfaces with malignant growths.

**The Teaching of Surgery with Special Reference to the Didactic Method.**—Dr. J. D. Bryant of New York said that it was not fanciful to believe that disease and health each has a language of its own; in disease this language is called the signs and symptoms. Medicine and surgery are closely linked together, and the surgeon who endeavors to practise his art without the keenest kind of medical interpretation is indeed a poor product. The power of diagnosis is fully as important to him as the technic of operating. The language of these two great branches is similar, but not exactly alike. He then gave the surgical synopsis which he has had in use for many years at the New University and Bellevue Hospital Medical College. It was as follows: 1. Definition; 2. Anatomy; 3. Pathology; 4. Causation; 5. Symptoms and Signs; 6. Diagnosis; 7. Complications; 8. Treatment; 9. Prognosis; 10. Sequelæ. Clinical teaching is absolutely essential but didactic lectures are equally important. No student can graduate and become an intelligent practitioner of surgery without having been taught by a combination of the two methods.

**The Teaching of Surgery.**—Dr. H. L. Burrell of Boston said that it was impossible for him to give more than a mere outline of this paper, which had reached monographic dimensions; he had assigned some of its subdivisions to members of the Association for subsequent discussion. Many of his conclusions and remarks were based on information that he had gathered by writing to the heads of departments in educational centers all over the world. He concluded that a great deal of individuality must be shown by the teachers, and that no laws could be laid down for the government of any one man or of any one subject. Personal contact with the cases is essential to the student's success; some learn by seeing; some by the touch, some by the ear; there is no universally best method. That there should be extramural teaching was very definitely established in his mind.

Dr. Matas of New Orleans spoke on didactic lectures, the topic assigned him by Dr. Burrell. He said that in the University of Tulane they were striving to follow the example set by the richer universities of the North, and he felt that vast gains had been made by his department in the last six years. Didactic lectures must retain a very important part of the curriculum; they afford to the student a panoramic view, while the clinical teaching is essentially minute. He has classes in the first year in minor surgery, in the second of physiology surgery, in the third of surgical pathology, in the fourth of regional surgery. The didactic course was given in the third year only.

Dr. Eliot of New York spoke on recitations. He said that surgery was naturally subdivided into two great parts, the practical and theoretical. Without the recitations no student can become thoroughly familiar with the work whether the head of the department covers it in detail or only in part. There has been great advance since his student days at Columbia; the students are now encouraged to confess their shortcomings in conferences, and they are not criticized for not knowing a detail, but rather for hiding their lack of knowledge.

Dr. Richardson, in discussing surgical anatomy, said that most assuredly it should be taught by surgeons; they alone are in a position to know what parts of this broad domain are of practical value; the course should be compulsory.

Dr. DaCosta of Philadelphia speaking on technic said that it was difficult nowadays to impose upon the student the old clinical forms of bandages and other dressings in the face of so many new and perhaps more valuable details; nevertheless he regretted that there should have been such an absolute loss of these old methods because they possessed considerable value; the use of the gauze bandage had been largely responsible for this, and had been permitted too free a distribution. In the bandage courses which he taught living models were always used.

Dr. Moore of Minneapolis said that an early orthopedic training had taught him the absolute necessity of baring the whole body for physical diagnosis; if this is accorded to children why deny it to adults? Students should be taught the normal variations of the body, the difference in the length of the extremities, the position and surgical importance of the prominences.

Dr. Brewer said that in the section teaching at Columbia a sort of consultation method had been devised which was of the conference type; in it all the work was done by the students, and an interest was produced not seen with any other method. More important even than this, it taught the students the method of arriving at exact diagnoses.

Dr. Weir spoke on clinical instruction; he said that perhaps to the detriment of the courses didactic instruction had been much abrogated in New York, one lecture a week, which he and his colleagues had allowed themselves had proved insufficient and a change would probably be inaugurated.

Dr. Bell said that at McGill they felt very distinctly that the tutorial system was essential, and to this end the house surgeon was given charge of senior students, each of whom was obliged to prepare a thesis.

Dr. Finney said that at Johns Hopkins the students do not see a patient for the first two years; in the third year all operations which can be done are performed on dogs, because they have found that living wounds differ very materially from dead wounds.

Dr. Nancrede said that he and his colleagues felt that all human work should be preceded by work on animals, and the student was obliged to operate on his dog, to care for it, to carry out every detail just as though it were a human being; and that if the dog died it was credited against the student. He was happy to see from this discussion that all the schools of high type were carrying on the same sort of work.

Dr. Ochsner said that for good surgical teaching it was essential that the school have control of a good-sized hospital; the contact of the student and the patient should be long continued, and is indispensable. To this end he advised that hospitals have small wards with perhaps not more than six beds.

The Association then adjourned to the Albany Hospital, for an inspection of this building. Dr. Vander Veer read a paper on The Essentials of Modern Hospital Construction, in which he gave the details followed in the erection of the new building. It cost $292,000 and the expense of running it is about $80,000 a year. One important point which has proved very useful in gathering this sum together has been the arrangement of the rooms, which were graded for patients who could afford to pay from five to thirty-five dollars a week. Every effort was made in the construction to surround the patients and their friends with every possible comfort. The hospital is on the pavilion system, has its own electric-light supply and is modern in every way. Members of the staff gave lucid explanation of the working of the hospital technic, and Dr. Macdonald then showed a case of splenectomy and cholecystotomy, which was progressing well, and Dr. Vander Veer showed a case of gastrectomy of four months' standing in which the patient had gained about sixty pounds and was about to take a good-sized meal.

THIRD DAY—JUNE 5TH.

**Complications Following Gastro-enterostomy.**—Dr. W. J. Mayo said that during the past ten years in which gastro-enterostomy had been done at St. Mary's Hospital, there had been but ten deaths. Mortality in his malignant cases had been 20 per cent.; in the benign series 6 per cent., giving a general average of about 9 per cent. The causes of death were as follows: Exhaustion, 3 cases; exhaustion in which pernicious vomiting was a factor, 2 cases; progressive asthenia, 3 cases; separation of anastomosis from the stomach-wall, 2 cases. The most far-reaching portion of this leading paper was the observations on the prevention of pernicious vomiting. If the site of the anastomosis be at the absolute bottom of the stomach-pouch it matters not whether the anastomosis be made anteriorly or posteriorly, there will be no vomiting. Antero-anastomosis should be done at the time of primary operation because if the opening be at the most distant portion of the stomach there will be no need for it. It is, however, a valuable makeshift, and is more often indicated with suture than button; the latter has the disadvantage of sometimes dropping off into the stomach even though the operation be done posteriorly. As to the contraction of the orifice, he stated positively that this does not take place unless the pylorus is either open at the time of operation or opens later. This may be brought about by the healing of an ulcer for which the gastro-enterostomy may have been done, which ulcer, situated near the pylorus, had produced such an amount of inflammatory reaction as to close it. With the healing process this reaction diminishes and the pylorus becomes gradually patent, not, however, at times, at the same rate that the anastomotic orifice closes. One may, therefore, conceive of the stomach having two outlets, the combined capacity of which is insufficient for the transmission of its contents. This very naturally leads to the formation of the "vicious circle." Experience has taught that if the anterior operation be done, fourteen to fifteen inches of jejunum must be left above the anastomosis; for the posterior operation about ten inches. This is of importance, because no one can tell that a secondary entero-anastomosis may not become necessary. He was obliged to reoperate in five cases, one for secondary ulceration involving anastomosis, three for secondary contraction of the anastomotic orifice. In one of those cases in which the pylorus was not obstructed, a posterior operation, the patient died because the gut left above was too short to permit of perfect drainage through a secondary entero-anastomosis. In one case of anterior operation the small bowel prolapsed through the loop, causing chronic obstruction.

Dr. M. H. Richardson admitted that Dr. Mayo was past master of this important branch of surgery, and that he did not feel competent to do more than praise his brilliant work. In his own cases the conservatism of others had prevented him from performing gastro-enterostomy at a sufficiently early date to make it successful. Many of them had been moribund prior to operation and although every effort was made to prepare them for the operation and to support them after it, few of them rallied. He has preferred making efforts to restore the patency of the canal at the pylorus by doing one or other of the plastic operations upon that area. That the vomiting may not in all cases be due to anatomical failure, as Dr. Mayo suggested,

would seem to be shown by a recent case upon which he had successfully operated and in which the occasion arose some time after to do a pyloroplasty; although there had been very serious vomiting after the gastro-enterostomy he found on examining the site that it was perfect anatomically in every detail and situated at the base of the stomach; nor was there any spur present which might have accounted for the distress. He did not mean unkindly to criticize gastro-enterostomy; it was simply that he had not been fortunate in obtaining a favorable case and also that he had a feeling that the procedure was perhaps less surgical than the rehabilitation of the normal channels.

**Pyloroplasty, with Report of a New Method.**—Dr. J. M. T. Finney gave an interesting account of the plastic work of the stomach since its inception in 1886. He showed diagrams of his new technic which he has carried out in five cases with very perfect results. The technic of this operation is as follows: He places a posterior row of sutures between the first portion of the duodenum and the pylorus; about two and one-half inches anterior to this row is placed a second series; these are all of the Halsted type. Incision, which is in the form of an inverted "U," is next made and the opposing sutures tied. It is simple; there have as yet arisen no complications which contradicted its use, and he thought that it seemed to have a broad field of usefulness. The very important point in the technic is to free the pylorus and the duodenum absolutely from the many adhesions prior to operating. The pylorus must be absolutely free; this is done before any sutures are placed. Three temporary sutures serve to hold the freed organ well out in sight. The pyloric opening gained by this procedure is about two and one half inches in diameter.

In the discussion of Dr. Finney's new operation Dr. Bevan said that he preferred the suture to the button because with good technic not more than five minutes should be consumed in sewing. In twenty to twenty-five per cent of cases the Murphy's button is retained and while in many of these it does no harm, it is not a desirable thing to have so large a foreign body loose in the alimentary canal. He found Dr. Finney's operation rather complicated. The Kocher pylorectomy is simpler and would meet all indications. He very strongly decried the use of interrupted sutures stating that they had no place in intestinal surgery; the continuous gives a more even tension and better controls and hemorrhage.

Dr. Meyer of New York said he had done about thirty cases of gastro-enterostomy and had used all methods; he had been so fortunate as not to encounter the "vicious circle." The posterior operation is undoubtedly the better partly because of less liability to vomiting, partly because the loop formed in the operation anteriorly is always a possible source for internal hernia. The anterior operation is easier, but if a button be used it is much more apt to fall into the stomach. Dr. McGraw's elastic ligature is a most admirable device and he recommended its employment in the establishment of anastomoses in this area. Sufficient gut must be left above the anastomosis to do entero-anastomosis by the ligature subsequently if necessary.

Dr. Harris said that because of the rotation of the stomach wall growth, which is brought about by the posterior wall growing more rapidly than the anterior, the inferior vessels are usually found above the lower margin of the sac and in front. This is so true that a lad upon whom he had recently operated for a bullet wound in the anterior abdominal wall had the posterior surface of the stomach perforated twice by the bullet, while the anterior wall remained intact.

Dr. Kammerer of New York said he had done the posterior operation during the last thirty cases with Murphy's button; the results are so much better that he has entirely given up the anterior operation: He had had no vicious circle in the last thirty cases; this he attributed to the fact that the anastomosis had been made at the bottom of the stomach. He in no way agreed with Dr. Bevan that the interrupted suture has no place in intestinal work; on the contrary he felt that it had a very distinct and important part to play.

Dr. Weir said that he had done about thirty-three operations of gastro-enterostomy; in the first ten there were four deaths, and in all these the circle was a prominent factor. Suturing the gut to the stomach, which had been suggested as a means for preventing anatomical displacement by lifting it up in a measure, is a procedure of no value to prevent contracture; he no longer advocates the twisting of the gut, because it has been shown to possess absolutely no importance. Recently he had used the posterior operation done with a large flanged Murphy's button combined with entero-anastomosis, and the results were admirable.

Dr. McGraw said that gravity is not the factor to consider in the circle, but rather the relation between the peristaltic power of the gut and of the stomach; if the stomach be depraved, worn out and weak, as are these stomachs, it is not difficult to see that the gut which has existed for many months under somewhat better conditions than the stomach should have greater power. Like Dr. Richardson, most of his cases have been moribund, and his statistics were bad. He made a plea for the use of his elastic ligature on the stomach, which he said many surgeons seemed to fear because it might not cut through. It will cut through if one uses a strong elastic and ties it tight.

Dr. Ochsner said that his results were so bad that he had entirely abandoned gastro-enterostomy until Mayo taught him how to do it. He is convinced that the successful working of this operation depends entirely upon the establishment of drainage.

Dr. Rodman said that the anterior operation can be made practicable, as has been shown by Mayo's eighty successful cases; a point somewhere within the second fold of the jejunum must be chosen.

Dr. Mayo, in closing, said that there were certain indications for the anterior operation, namely, anomalous distribution of the superior mesenteric artery and certain cases of peculiarly fat short mesentery. He could not agree with the gentleman who said that gravity played no part in the vicious circle; all gastro-enterostomies done for ulcer of the pylorus are apt to give trouble just as soon as the ulcer begins to heal; this may be a contraindication to the operation. In cases of permanent obstruction of the pylorus nothing is better than gastro-enterostomy. Entero-anastomosis is unnecessary for the prevention of the circle, but it must be used if the pylorus is to remain open.

**Surgical Treatment of Tuberculous Peritonitis.**—Dr. Ochsner said that surgical treatment gives 50 per cent. of recoveries in those cases which have chronically refused to react to medical treatment. This would seem to show that the medical treatment was better than the surgical, inasmuch as it is free from danger, but it must be remembered that 50 per cent. recoveries in surgical cases is a very different proposition than the same percentage in the medical cases, because they are all of a much graver type. Surgery does its work late, medicine does its early; thus they cannot be compared. The immediate death-rate from the operation is very slight; it is the seemingly hopeless cases in which a simple laparotomy gives benefit, and the simpler the better. He then cited numerous cases, and pointed with pride to

one in which the operation had so far restored the health of a chronically sick woman as to enable her to give birth to a child with normal labor. His conclusions were as follows: (1) Medical treatment should always be long continued inasmuch as those operated on in the earliest stages often recur. (2) All food should be sterile, with attention to hygiene and all known medical methods of combating tuberculosis most vigorously insisted upon. (3) This treatment should be continued if the case improves. (4) If not, it should be operated upon. (5) If the tuberculosis be confined to one organ without denuding the peritoneal surface, it should be done. (6) If fluid be present, do not remove any tissues. (7) The absorptive power of the organism of tuberculous material is wonderful. (8) The operation consists in admitting air thoroughly and then closing, with drainage. (9) Int stinal fistulæ are usually the product of too much surgery. (10) During recovery from operative intervention medical treatment must be carefully given. (11) Chronic cases with the encapsulated fluid are particularly susceptible to operation. (12) Repeat operation if necessary.

In the discussion which followed, Dr. Bevan said that all would agree in regretting Dr. Fenger's absence. He had shown conclusively the futility of opening the abdominal cavity; the recovery which appears to follow it is only a seeming one; because of this all the recent cases at the Presbyterian Hospital have been turned over to the internists who, under Dr. Billings, have treated the cases with the X-ray. He cited two cases in which this treatment had apparently caused improvement.

Dr. Burrell arose to disagree with each of the last speakers. It is not easy to diagnose abdominal peritonitis; grossly there are three types, the matted, the acute exudative and the chronic. He thought it very doubtful that a chronic encapsulated tuberculosis exudate would yield to the X-ray treatment.

Dr. Mayo said that in the absence of fluid the cases might well be termed medical; but one might just as well attempt treatment of ovarian cysts by the X-ray as surgical forms of tuberculous peritonitis.

Dr. Richardson said that some of the most brilliant successes in all surgery have come from the removal of tuberculous masses from the abdomen; he thought Dr. Bevan had gone too far in his denunciation of surgical intervention, and agreed cordially with Ochsner that mere opening of the abdomen has given undoubted and wonderful cures.

Dr. Weir agreed that the medical condition was not one suitable for intervention, but said that since he had seen the marvelous effect of operation on tuberculous peritonitis, in a patient upon whom he had subsequently to do a secondary operation for a different disorder, he had been a firm convert. In four months' time after operating, every miliary tubercule had disappeared.

**Extirpation of a Leucocythemic Spleen.**—Dr. McGraw had done this operation on a child eight years of age. A tumor had appeared, the blood and all other systems giving all the evidences of leucemia. The removal, which unhappily was tardy, gave no particular difficulty, but the child gradually faded away and died in six hours. Bits of this child's spleen were transferred to guinea-pigs, but at the end of half a year, when the animals were killed, there were no signs of leucocythemic infection. In order to increase knowledge as to the relation existing between the spleen and the development of leucemia, a series of cases should be prepared in which the spleen had been excised at a very early date; this incidentally would do away with the danger of hemorrhage from adhesions, which is usually frightful and often leads to death.

**Cancer of the Appendix.**—Dr. R. H. Harte reported two cases of this condition. He said that in reviewing the literature he had been able to find but seventeen cases of primary carcinoma of the appendix; in most of these there had been a history of recurrent appendicitis and the author suggested that this was an additional reason for prompt operative intervention. He also urged that very careful routine microscopical examinations should be made of every appendix removed.

Dr. Gerster of New York said that this must be a very rare condition, because in the last twelve hundred cases of appendicitis at Mount Sinai he could recall but two of carcinoma of the appendix. They produce symptoms only when the tumor stops the opening of the appendix and thus gives rise to an ordinary attack of appendicitis.

Dr. Matas said that in over one thousand cases he had never seen a single example.

**The Radical Operation for the Cure of Aneurisms.**—Dr. R. Matas said that there were two fundamental surgical methods of treating aneurisms of the extremities; the first the Antyllian, the second, extirpation, which has wrongfully been ascribed to Phyllagrius. He related in considerable detail the history of the surgical treatment of these aneurisms, particularly the efforts made in the last century and preantiseptic days. He illustrated his method by a series of diagrams which made it clear. It consists in the application of an intersaccular purse-string suture for the obliteration of the channel or channels connecting with the vessel. The more important features of the operation are (1) construction by an Esmarch or digital compression; (2) free incision of the sac; (3) the obliteration of the opening; (4) the inversion of the walls of the sac and tacking down of the skin. This technic gives a depression where formerly there existed a tumor. He applies free drainage and immobilizes in plaster of Paris; although there are certain types of aneurism in which this operation is either inapplicable or has to be somewhat modified. In general its procedure is as follows: (1) The intervention is from within, there being no external dissection and consequent injury to nerves and surrounding tissues. (2) It does not disturb the collateral circulation and there is less fear of gangrene. (3) It may even be so happily compassed as to allow the aneurismal feeder to remain patent. (4) It lines the cavity with skin and thus gives a very hasty recovery.

Dr. Gerster welcomed this operation because of the great difficulty which exists in dissecting out the sac. He felt very sure that it was a distinct and valuable addition.

Dr. Eliot of New York said that the surgical treatment of aneurism differed in the upper and lower extremities; above, the anastomosis was so generous that it can be cut out without fear of gangrene; below, however, he thought Dr. Matas' operation would be of very great value because of the comparatively small blood-supply. It depended also somewhat in its application, in his opinion, on the nature of the aneurism; if it were friable, the sutures would tear out; therefore it would seem on first thought that the traumatic type would be more amenable to Dr. Matas' treatment.

Dr. Matas, in closing, said that it was impossible to cover every type of aneurism, but that serious accidents with other methods had made him consider the matter very seriously. Even in very advanced atheromatous conditions the sutures hold well and remain

blood-tight. An anomalous supply to the section often defeats the Antyllian method.

**The Influence of the Roentgen Ray upon the Different Varieties of Sarcoma.**—Dr. Coley said that it had been used as yet in comparatively few sarcomata; he had, however, had ten cases under observation, and while he could report no positive cure, yet there was in each and all a marked and wonderful improvement. He had tried the experiment of using the toxins in conjunction with the X-ray, and had elicited a happy result; but whether it was due to the combination of the two or to the single action of either, he was not prepared to say. When it is considered that sarcomata often appear in the most inaccessible regions, as for instance in the neck, although no one knows how or why the rays work, it must be to all a most welcome agent. There is, peradaventure, some force in the actinic rays, which exerts inhibitory power on tissues of low vitality and eventually causes them to disappear. It would seem to be a factor in favor of the parasitic origin of these growths.

Dr. Richardson said that everything possible should be done to encourage the use of the X-ray in apparently hopeless cases of sarcoma; he cited a number of cases which he had sent to Dr. Coley for treatment in which there had been a marked and wonderful improvement and even recovery.

Dr. Gerster said that the old German surgeons got as good results with potassium iodide and other agents as we are now obtaining from these new-fangled media. The X-rays, in his opinion, do not effect cures; they are palliative and attractive in perhaps appealing to the patient. There is too much tendency to accept as final the statements as holy writ, and there are many cases on record where syphilides have been mistaken for sarcoma.

**Cysts in Connection with the Teeth.**—Dr. J. C. Oliver of Cincinnati said that these cysts usually occur before the thirtieth year, and the most frequent site is the third molars of the lower jaw, the canines being next. The cysts occur in the permanent teeth. Whatever their origin may be, whether due to a misplacement of the dental apparatus by various forces, or to dermoidal remains, or to a failure of evolutionary processes, the treatment is always to incise before the jaw is removed. It often happens that these are mistaken for sarcomatous growths inasmuch as they contain cells which resemble these tumors. The diagnosis is made on the following points: (1) Absence of the tooth; (2) cystic nature of the swelling; (3) crackling (not constant); (4) exploration.

**Implantation of Silver Filigree for the Closure of Large Hernial Apertures.**—Dr. Willy Meyer, of New York exhibited types of filigree which he had imported from Germany and used with great success in closing the otherwise large hopeless openings of ventral hernia. He suggested that the use of this filigree need not be limited to the closure of hernial orifices, but could be applied to any orifice, made either by trauma or in the course of removing neoplastic growths. The meshes remain in the abdominal wall kindly, on account, no doubt, of the peculiar action of the tissues on the silver.

**Report of Two Cases of Exophthalmic Goiter Treated by Operation.**—Dr. Emmet Rixford, of San Francisco defined the relation of surgery to-day to this disorder. There are very distinct contraindications to operation, one of which is a seriously involved heart. The operation should be done in periods of quiescence. In no class of cases does greater danger exist from anesthesia, and this has led him to use cocaine. As to the type of operation, a partial thyroidectomy seemed to be preferred in this country. Although Jaboulay and Jonnesco in Europe had met with success in their resections of the cervical sympathetic, it had not been so successful here. He cited cases of his own and others in which hemisection of the thyroid had proved very beneficial. One peculiarity of the operation is that it almost always leads to a marked increase of the gravity of the symptoms; this, however, usually passes away in a few days.

**An Improved Instrument.**—Dr. S. H. Weeks, of Portland showed a sound with filiform bougie attached, with which he had been able to successfully pass a number of strictures, and he believed that if this instrument were put into the hands of general practitioners there would be fewer false passages made.

**The Present Status of the X-ray as a Means of Diagnosis and as a Therapeutic Agent.**—Dr. A. D. Bevan allowed his exquisite collection of photographs to speak for him in great part. They were not all of his own making, the most prominent operators in this line in Chicago, which has indeed been the hotbed of this work, having contributed to his collection. He stated that he was not alone in the opinion that the report of the Association on the X-ray, while admirable in all details, should be reviewed because of the great progress which had been made since its drafting. Every hospital should have an X-ray specialist just as surely as it has a pathologist. It is undeniable that burns may occur, and in the majority of cases photographs of which he showed they did occur. There is absolutely no use in attempting to treat deep-seated carcinomata; it is only those of the epitheliomatous type, or recurrent tumors of the breasts which yield to the ray. He urged the Association that a definite stand should be taken, lest in the enthusiasm for this new method there might be awakened among the laity a belief that primary carcinoma of the breast and other organs, which are now admittedly curable in a large proportion of cases by the knife, would, because of the fear of the individual, fall into the hands of unscrupulous X-ray operators. This is an accident greatly to be dreaded, as it only means that the unfortunate individual would become hopelessly involved, and the use of the knife accepted too late. The photographs showed almost inconceivable results; they were all of the superficial neoplasms, but there was one showing the effect of treatment of leucocythemic nodule in the axilla, which disappeared in three weeks after having resisted every other form of treatment, which was perhaps as extraordinary as any.

Dr. Vander Veer had had many cases similar to those shown in Dr. Bevan's photographs, and he cordially agreed with him that there was great danger of the laity jumping at the conclusion that in the ray they possessed a curing agent which would shield them from the use of the knife. This it must be distinctly understood is not the case. The ray affects only those malignant tumors in which the skin has been broken; it should be used as a prophylactic after operation, not as a substitute for it.

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## NEW YORK ACADEMY OF MEDICINE.—SECTION ON ORTHOPEDIC SURGERY.

*Stated Meeting, Held April 18, 1902.*

George R. Elliott, M.D., Chairman.

Dr. J. H. Waterman presented the case of a child with congenital elevation of the left scapula. The X-ray revealed the condition of elevation and also a bony plate running from the spine of the scapula to the seventh cervical or first dorsal vertebra. The advice of the Section was asked as to treatment. It was stated that Wilson of Philadelphia had reported two cases

treated by operation. In standing the elevation of the shoulder was marked and the head was held slightly inclined to the left side.

Dr. Russell A. Hibbs said he had observed a similar case in a subject twenty-five years old, showing also a plate of bone connecting the scapula and the seventh cervical or first dorsal vertebra. He advised operation in the case presented by dividing the bony attachment.

**Congenital Dislocation of the Hip.**—Dr. Royal Whitman presented a series of ten cases illustrating the treatment of congenital dislocation of the hip. The cases were of interest as demonstrating the curability of the affection. In the entire number there had not been a relapse since treatment had been discontinued. With one exception the patients had been operated upon by the bloodless method of Lorenz, slightly modified in certain instances. At the present time, as would be evident upon inspection, it was impossible to say which limb had been treated. The record of the cases is as follows: (1) C. P., female, dislocation of the left hip, operated upon at the age of nineteen months, April 19, 1897. The plaster bandage was removed on October 12, 1897. (2) O. H., female, dislocation of the left hip, operated upon at the age of five years, May 20, 1889. Plaster bandage removed March 15, 1898. (3) L. S., female, dislocation of the left hip, operated upon at the age of nineteen months, November 15, 1897. Plaster bandage removed June 15, 1898. (4) C. F., female, dislocation of the left hip, operated upon at the age of two and a half years, October 11, 1899. Plaster bandage removed June 2, 1900. (5) A. C., female, dislocation of the right hip, operated upon at the age of two and a half years, January 28, 1900. Plaster bandage removed August 9, 1900. (6) V. R., female, congenital dislocation of the left hip, operated upon at the age of four and a half years, January 31, 1900. Plaster bandage removed August 22, 1900. (7) E. R., female; dislocation of the left hip, operated upon at the age of two years, May 22, 1901. Plaster bandage removed September 13, 1901. (8) F. C., female, dislocation of the left hip, operated upon at the age of four years, July 2, 1901. Bandage removed January 7, 1902. (9) M. L., female, dislocation of both hips, operated upon at the age of two years, May 10, 1899. Plaster bandage removed November 10, 1899. A perfect cure on the right side, not perfect on the left. (10) M. A., female, dislocation of the left hip, operated upon at the age of five years, October 30, 1900, by arthrotomy, without excavation of the acetabulum. Plaster bandage removed October 10, 1901. Perfect cure.

Dr. Whitman said that Case 5 had been of much interest. On removal of the spica bandage a limp had persisted for many months accompanied by slight outward rotation of the foot. If the limb were rotated slightly inward the X-ray picture showed an apparently normal joint. The persistence of the limp was due apparently to laxity of the capsule and to slight anterior twist of the upper extremity of the femur. To his surprise the child had steadily improved and at the present time, more than a year and a half after the discontinuance of treatment, there was practically no trace of disability.

In Case 9, the bilateral displacement of the left hip was originally recorded as a transposition, but after a lapse of nearly two and a half years there was no shortening and but a very slight limp. The head of the bone was apparently secure in a position slightly anterior and external to the normal. This result was far better than after the ordinary transposition, in which there were always a certain amount of shortening and a characteristic limp. The case in which arthrotomy was performed was not only of interest as showing the perfection of the cure obtained by this method, but also in that the patient is one of three children of the mother, each having congenital dislocation of the left hip. The eldest child, now about eighteen years of age, was untreated and presents a shortening of the limb of three inches. The second child, after three unsuccessful attempts by the bloodless method, was operated upon by the Hoffa-Lorenz method with excavation of the acetabulum on October 25, 1898, at the age of five years. The final result was very satisfactory.

Dr. R. H. Sayre considered that the result of the cases presented a great advance in the treatment of congenital dislocation and that a few years ago such a collection of successful cases would have been impossible.

Dr. George R. Elliott said the remarkable showing of good results by Dr. Whitman ought to answer fully those still skeptical about the non-cutting operation. He noticed that the patients were all apparently under four years of age at time of operation. A very large percentage could be cured at that age. The Lorenz method, even if it did no good, certainly did no harm, and in older cases warranted its use before cutting was resorted to. He further said that it could usually be determined at time of operation what the final results would be, at least such was his experience. He asked Dr. Whitman what percentage of his operations showed failure, and if he reduced both hips at time of operation in double congenital hip dislocation.

Dr. Whitman stated that in the case of bilateral displacement both hips were treated at one sitting. He said that he had modified the Lorenz method somewhat, in that he usually extended the plaster bandage below the knee, the leg being flexed upon the thigh at a right angle, with the object of fixing the part more securely. At the end of two months the leg portion of the bandage was removed. In certain instances the femur was rotated slightly inward, in order to fix the head of the bone directly beneath, or slightly internal to, the femoral artery. He had on other occasions stated that not more than twenty-five per cent. of the cases were cured by this method, but the indications in his later operations were much more favorable. He did not agree with the statement of the last speaker, that the result of treatment could be foretold at the time of operation. In many instances an anterior twist of the upper extremity of the femur made failure inevitable, and in many instances arthrotomy and osteotomy would be essential, excavation of the acetabulum being reserved for exceptional cases.

**Coxa Vara.**—Dr. Whitman presented a boy about seven and a half years of age, illustrating the cure of coxa vara by cuneiform osteotomy at the base of the trochanter. The patient had been presented to the Section at a previous meeting by Dr. Taylor. According to the mother's account, he had limped ever since he began to walk. Although the operation was performed but five months ago, the functional cure was perfect.

**Alcoholic Arthritis.**—Dr. Elliott presented the case of a boy aged twelve years, who some three years ago began to have swelling of the joints of the fingers and wrist. The right wrist, the distal joints of the fingers of both hands and the distal joints of the first and second toes were involved. The liver was enlarged, projecting below the umbilicus, the spleen was enormously enlarged, and there was only a slight enlargement of the lymphatic glands. The mother stated that as the boy was not strong she had given him whisky daily for about one and a half years. He regarded this as the etiological factor of what he thought could rightly be designated alcoholic arthritis. Arthritis deformans was excluded since that grows progressively worse and

is not accompanied by enlarged spleen. Under proper nourishment and little general medication the symptoms had nearly all disappeared. Heberden nodes still persisted, something very rare in children.

**Destruction of the Lower Epiphysis of the Tibia.**—Dr. Hibbs presented the case of a boy aged eleven years, first seen, October, 1900, with deformity of the right tibia following a severe fall and supposedly resulting in fracture. The deformity was corrected by osteotomy. He suspected that the lower epiphysis of the tibia had been injured and this was corroborated by the recurrence of the deformity after operation. At time of operation the right tibia was 12⅛ inches long and the left 13. If left untreated the deformity would progress. Members of the Section were asked if they had had any experience in the treatment of such cases by destruction of the epiphysis of the fibula.

Dr. Whitman said that a member of the American Orthopedic Association had made the statement at its last meeting that he suffered from a disability similar to the case reported, that his fibula was two inches longer than the tibia, yet the disability and deformity were so slight that from his personal experience he had advised against operation such as had been suggested.

Dr. Sayre said he thought destroying the epiphysis of the fibula as suggested by Dr. Hibbs would not result in as useful an extremity as by leaving the limb untreated, since it would produce considerable shortening. He suggested slitting the tibia lengthwise, sliding the pieces past each other and so lengthening the tibia sufficiently to bring the articular surfaces parallel with the ground.

Dr. Hibbs also presented a child aged five years, when first seen by him in October, 1900. One month previously it had been operated upon in a general hospital for osteomyelitis of the lower end of the right femur. This was followed by complete paralysis of the quadriceps extensor. This paralysis persisted with no response to either electrical current. No other muscle was affected and it was believed to be due to division of the tendon or muscle with failure to unite.

**Fractured Vertebral Column.**—Dr. Elliott presented a specimen of a fractured vertebral column removed from a man aged twenty-nine years, first seen in 1897. One year prior to that he attempted to hold a quarter of beef which had slipped from its pin and immediately felt a severe pain in his back. He remained in bed one week. He then attempted to go about and did so for one year with gradually increasing motor and sensory paralysis of both lower extremities, and there developed a marked kyphosis at the tenth dorsal vertebra. Plaster jacket did not improve matters. The paraplegia became complete. He was subsequently operated upon by Dr. Gerster at the Mount Sinai Hospital and evidence of fracture was found with bony fragments pressing upon the cord. These were removed, but Dr. Gerster expected no benefit to result. The patient finally died and the cord was found completely severed. The progressive nature of the paralysis and the absence of involvement of the bodies of the vertebræ, with a well-marked, kyphosis, were interesting features; also the faulty diagnosis of caries which at one time had been made. The angular prominence simulated very closely the "bos" of Pott's disease.

Dr. W. M. Leszynsky considered the history of the case very interesting and thought that it was hardly probable that anyone from the history would have made a diagnosis of fracture. H thought there was a slight injury to the cord and dura which set up a myelitis secondarily, becoming finally complete with ultimate destruction of the cord. It was well established now that complete division of the cord produced loss of all reflexes below the site of section. He cited a case of his own of a patient who had fallen from a height of twenty feet, fracturing the tenth, eleventh and twelfth dorsal vertebræ with immediate paralysis and complete loss of reflex action, sensory and motor power. The diagnosis was readily made in that case and confirmed at autopsy.

**Early Treatment of Disability Following Infantile Paralysis.**—Dr. A. B. Judson reported a case of varus of the left foot in a boy of five years. Leverage by braces cured the varus but could not remove the paralysis of the calf muscles and calcaneus. The riser was omitted from the inner side, where it had given leverage against the varus, and the upright was made of one piece with the tread, which was shaped to the instep and could readily be bent down or up as the boy required more or less "toe" in walking. With this brace (exhibited) walking was without a trace of lameness. Deformity had been prevented and fibers developed which without early locomotor activity would have disappeared.

Dr. Charles H. Jaeger presented a specially-made gouge devised by a French surgeon for the purpose of scooping out the acetabulum in operation for congenital dislocation of the hip.

## WILLS HOSPITAL OPHTHALMIC SOCIETY.

*Stated Meeting, Held February 18, 1902.*

S. Lewis Ziegler, M.D., in the Chair.

**Glaucoma or Optic Atrophy?**—Dr. Conrad Berens presented a case for differential diagnosis between glaucoma as expressed by the ophthalmoscopic changes and optic atrophy as evidenced by the other data. Dr. P. N. K. Schwenk favored the atrophic theory. Dr. Berens stated that the case at first appeared like one upon which an immediate iridectomy for glaucoma should be performed; the symptoms, however, subsequently yielded to treatment directed toward incipient optic nerve atrophy. He had found that the papillary vessels were not plunging, and the choroidal and peripheral retinal ones could not be determined. He had postponed operation for the following reasons: The anterior chamber was full; the corneal epithelium was in good condition; and the irides were freely responsive. He nevertheless feared a glaucomatous attack. For a period of three months the patient had had frequently repeated and large doses of sulphate of strychnine several times daily without any physiological symptoms and with improvement in one eye.

Dr Walter L. Pyle presented transcripts of the fields of vision of the case, and called attention to the fact that those for color were not disproportionately contracted. The red and the green fields of the right eye were slightly contracted, especially the former. They were properly related. There were central color scotomata. The color fields of the left eye were concentrically contracted, particularly to the temporal side, but there were not any symptoms of glaucoma in the anterior segment of the eye. He had found that the optic nerve cupping was not deep—merely a shelving, as it were, over which the small retinal vessels could be followed. He believed that the peculiar feature of the case was the fact that the color-fields were not disproportionately contracted as one would expect to find.

Dr. S. D. Risley thought the mixed atrophic appearances were dependent upon a physiological excavation and an unusually rigid sclera. He suggested the presence of a retrobulbar neuritis as evidenced by the contracted visual fields and the central scotomata. He would avoid operative interference.

Dr. William Zentmayer stated that in studying over one hundred cases of glaucoma occurring in the clinics of Drs. Norris and Oliver at the Hospital, he had found that the supposed characteristic cutting off of the nasal portion of the visual fields did not exist in the majority of cases. He had found that there generally is a concentric contraction of the fields and occasionally central scotomata.

Dr. Ziegler mentioned a case with deep physiological cupping and possible slight increase of tension that occurred ten years previously. The irides were responsive. There was not any dilatation of the pupils. The retinal vessels dipped considerably into a cupping in the optic nerve head which was some five diopters deep. One eye was operated on early, retarding the condition; the other was operated on later. The man returned with an attack of acute glaucoma.

Dr. Frank Fisher had seen Dr. Berens' case the first day that it was brought to the Hospital and believed that it was one of optic neuritis with atrophic symptoms. He still held to the same diagnosis, and could not admit glaucoma.

Dr. Charles A. Oliver stated that glaucoma complex occurred in many forms. This case was most probably one, he believed, of secondary type that made a picture of what may be spoken of as posterior glaucoma. The condition would eventually lead to blindness. Iridectomy in such cases is of no value. In most of these cases there are temporary blockings of the lymph-streams posteriorly, accompanied by ephemeral though definite rises in intra-ocular tension. The condition, he said, is sometimes benefited by treatment directed toward various causative dyscrasiæ, such as rheumatism and syphilis. The appearance is totally unlike the grosser forms of anterior glaucoma. The inflammatory signs often consist in associated low-grade retrobulbar neuritis giving rise to the so-called mixed type of the disturbance.

**Abscess of Frontal Sinuses.**—Dr. Berens presented a case of abscess of both frontal sinuses in which T-shaped drainage-tubes were to be inserted. The patient's condition at the time of the meeting, however, was so bad and so much hemorrhage had taken place that he had decided to drain but one side, leaving the other for a subsequent time when the patient's condition had improved. He stated that in this case a probe could be passed from one sinus to the other. He mentioned another case in which he had successfully used a system of T-shaped drainage-tubes to advantage. During the operative procedures the patient almost died on the table. He persisted, however, with a good result. A few days before the meeting he again had an opportunity of seeing the patient and found that the nasal passages were in excellent condition. A special point in the operation, he believed, was the frequency of extreme hemorrhage, which should always be carefully prepared for. The method of drilling through the bone was detailed. Personally he preferred to employ a double-edged cutting drill. He called special attention to the method of passing the tube through the drilled opening, and thence into the cavities. For this purpose he used a rubber drainage-tube with two strains of No. 12 waxed cord passed through it and threaded on an eye probe. He had found it necessary to use main force for the purpose. He mentioned the great value of peroxide of hydrogen in these cases during the operation, stating that it does two things, namely, stops local hemorrhage and when injected through the nostrils into the stomach it causes any blood in the stomach which may have been swallowed during the operation to clot and be vomited.

Dr. Oliver mentioned the great value of the cleansing and hemostatic properties of peroxide of hydrogen. He had successfully employed it in a case of sarcoma of the orbit that had been recently operated on by him. He had used it in full-strength solution and had found that it did not do any harm.

**Disease of the Orbit.**—Dr. Oliver then showed a case that had been successfully operated on by him and Dr. George B. Wood for disease of the orbit, sphenoid sinuses, and antrum.

Dr. Berens spoke of a case occurring in the late Dr. Keyser's clinic at the Hospital in which the patient was saved only by untiring efforts for nearly four hours before responding. Dr. Fisher spoke of his method of dealing with such bone cases. Dr. Ziegler suggested the use of a hand drill with a rachet and pinion. Dr. Berens stated that he had tried a great many forms of instruments and had finally concluded that the double-edged drill in a bulb handle is the best because the slightest motion is communicated to the hand and thus allows the operator to know what he is doing.

**Thrombosis.**—Dr. Schwenk presented a case of thrombosis of the central retinal vein. He based this belief upon the sudden onset of impaired vision, the repeated patches of retinal hemorrhages that could only be found in the course of the retinal veins, the optic nerve head swelling, and the hemorrhages in the macular region. There was a systolic murmur.

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## NORTHWEST MEDICAL SOCIETY OF PHILADELPHIA.

*Stated Meeting, Held May 6, 1902.*

The President, Wendell Reber, M.D., in the Chair.

**Toxemia of Pregnancy.**—Dr. William H. Wells dealt with the subject under seven subdivisions, *viz.*, etiology, symptoms, pathology, diagnosis, prognosis and treatment. The most important agents in the production of this condition were thought to be incomplete metabolism and the retention of poisonous substances in the body due to the faulty action of the excretory organs. Regarding the etiology of the condition, attention was directed to the marked hepatic lesions usually found in the autopsy of women who have died from eclampsia, and the opinion expressed that the condition of the liver was in all probability the primary cause of toxemia in pregnancy, to which the renal condition was a secondary factor. [This paper will appear in full in the MEDICAL NEWS.]

**Suppurative Tubal and Ovarian Disease.**—Dr. J. J. Gurney Williams gave a very exhaustive history of the development of abdominal section for the relief of these conditions. In the opinion of the author many of these cases, especially among the poorer classes, are of gonorrheal origin, which is oftentimes aggravated by lack of proper hygienic measures, the latter factor also playing an important rôle even in cases in which the specific infection is not present. Regarding the etiology of the condition it was thought that in the majority of cases the infection comes from without. Stress was laid upon the importance of making an accurate diagnosis, which, owing to the varied symptoms which each individual case presents, it was thought would have to be principally made from a digital examination which should be rectal as well as vaginal. Among the important clinical symptoms to be noticed were mentioned pelvic inflammation and the character of the menstruation. The previous history and the weight, together with history of the development of each symptom was thought to be of material assistance. Extra-uterine pregnancy, appendicitis, fixed and tender tubes, small painful ovarian tumors, including dermoids, fecal im-

paction, retroflexion and malignant deposits about the cervix, were thought to be the most frequent conditions which the surgeon is called upon to differentiate from pyosalpinx and ovarian abscess. As to the treatment of such conditions, in the opinion of the writer abdominal section and the removal of the diseased parts was thought to be the only proper method, as every case which had come under his observation, which had at first been treated by vaginal puncture was finally compelled to seek radical treatment, the relief by the former method, if any benefit was derived at all, being but temporary. Attention was directed to the importance of the proper preparation of the abdomen of the patient prior to the operation, and while the use of any antiseptic except alcohol in the preparation of the operator and his assistants was quoted as unnecessary, the importance of cleanliness by the use of soap, water and brush, changing the water frequently, and taking many minutes to scrub, was emphasized as an important factor. The danger of puncturing some other part than was intended when the method of vaginal puncture was employed was commented upon, which, together with the fact that an absolute differential diagnosis was in most cases impossible, was noted as a strong objection to this method. The use of silk sutures was recommended in all abdominal work, and in the author's opinion the objections which have been raised to this procedure are unfounded.

The discussion was opened by Dr. Charles P. Noble, who stated that he fully agreed with the author of the second paper in regard to the etiology of the condition in the majority of cases, *i.e.*, gonorrhea. For the treatment of gonorrheal pyosalpinx the removal of the diseased part was recommended, and when both tubes were affected it was thought advisable to also remove the uterus. Abdominal hysterectomy was thought to be the preferable form of operation and in the experience of the speaker the mortality has been very much lower since he has been performing this method than before, as there is less likelihood of the formation of adhesions or the development of sepsis. For the treatment of an abscess of the broad ligament or an ovarian abscess drainage was recommended, the preference to abdominal section being based not only upon the comparative simplicity of the procedure, but it having also the advantage over the former operation from the fact that in abdominal section there is a liability to peritoneal infection. This method was thought to be particularly indicated in acute cases, when the patient is too ill to survive a more radical operation. Attention was directed to fifty-three cases in which drainage had been performed with but a single fatality, that patient being one who had lately had an abortion and who died from her previous condition. In the experience of the speaker there has been an enormous decrease in the mortality when the drainage method was pursued over that observed when radical measures were employed, and the permanency of the cure was just as frequent by the latter method as by the former.

Dr. William E. Parke stated that in the treatment of the toxemia of pregnancy he thought the most important factor was the elimination of the poisonous matters, and in regard to the diet, food of a non-nitrogenous character and particularly milk was thought to be indicated, although mention was made of the fact that there was a certain number of cases in which milk was not well tolerated, and in these cases a light diet of fruit, some starches and plenty of liquids was recommended. The value of frequent urinalyses, and particularly of the estimation of the urea and specific gravity as a control agent was commented upon.

Dr. Peter N. K. Schwenk commented upon the fact that in a case of toxemia of pregnancy which had previously come under his observation, the examination of the urine of the child revealed the presence of a large percentage of albumin, which continued for about six months after its birth. The ocular symptoms noted by the author of the paper in these conditions were thought to be accounted for by the direct connection with the pelvic organs which is established by means of the sympathetic nerve and spinal cord.

Dr. Mordecai Price stated that he believed the radical operation was the only method which would effect a permanent cure in suppurative tubal and ovarian conditions, and while he recognized the value of drainage as an auxiliary factor, he felt that alone it was of but little value except as a temporary relief in patients too ill to stand the sterner measures.

Dr. Frank C. Hammond expressed the belief that vaginal drainage was of value in many cases in which the parts have never been deeply involved and was especially indicated in acute conditions.

Dr. J. J. Gurney Williams, in closing the discussion, stated that he did not think the mortality rate in double ovariotomy in cases which had come under his observation had exceeded one to two per cent. The removal of both sides was thought to be indicated in practically all the cases when one appendage was involved, thus avoiding the possibility of a recurrence, which had frequently been observed by the speaker, when only one tube was removed. Treatment by vaginal drainage was thought to be contraindicated, except in acute conditions where the patient was too ill to undergo an abdominal section. Regarding the closing of the wound the through-and-through suture was thought to be preferable to the layer method.

## BOOK REVIEWS.

CONTRIBUTIONS TO THE COMPARATIVE ANATOMY OF THE MAMMALIAN EYE, CHIEFLY BASED ON OPHTHALMOSCOPIC EXAMINATION. By GEORGE LINDSAY JOHNSON M.D., F.R.C.S.

From the Philosophical Transactions of the Royal Society of London.

IN this remarkable work, originally published in the Philosophical Transactions of the Royal Society of London, the distinguished author has presented the results of observations, mostly ophthalmoscopic, made on the eyes of a great number of mammals. The work contains 82 pages of text, 30 plates comprising 50 original large drawings of backgrounds of the eye, wonderfully executed in color; 4 drawings in black-and-white of the various types of the obliterated hyaloid artery in man; 1 plate containing 21 figures in black-and-white of primitive and retrograde forms of pecten and other vestigial remains in the ungulates, illustrating the successive stages from the corpus nigrum of the Equidæ to the functionally active unbraculum in the hyrax. One of the plates furnishes an ingeniously devised diagram showing the divergence of the optical axes in the mammalia. Besides these drawings there are observations as to the refraction of the animals examined, the divergence of the optic axes, peculiarities of the irides, pupils and other features.

The author's observations extend over a very wide field, and he tells us that it was not until a large number of animals had been examined, embracing nearly all the families of the mammalia, that he felt justified in making an attempt at generalizations.

As a zoological guide, the author has adopted the classification of the mammalia given by Gadow in his "Classification of Vertebrata" (London, 1898), which

is based on the most recent morphological investigations. The special descriptive part records observations as to the appearance of the fundus oculi by means of the ophthalmoscope in 182 species of mammals which fall under 103 genera of 47 familjes, comprising nine out of eleven natural orders, only two being omitted—the Cetacea and Sirenia.

This work must be seen and studied in order to appreciate its good merits; the reviewer, can, therefore, simply indicate some of the salient features.

Part II. is divided into eleven chapters, viz.: The Color of the Fundus Oculi and the Tapetum Lucidum; Vascularization of the Retina; Reversions of Type and Vestigial Relics; Shape and Color of the Optic Axes; Shape of the Pupil; Divergence of the Optic Axes; Refraction; Binocular Vision; Physiological Considerations; Influence of Domestication; The Ophthalmoscopic Appearance of the Fundus Oculi as Bearing on Classification.

The following facts are of general ophthalmological interest. As regards the color of the fundus oculi, the author has classified the animals examined under three heads. The red type includes every shade of red, chocolate, brown and gray. The yellow type includes all shades of yellow and orange. To the green and yellow type belong all the carnivores with the exception of those mentioned by the author. The red end of the spectrum is the most common; next the orange and yellow, and then the green, the colors being rare in proportion to their refrangibility.

The shape of the disk in the mammalia is mostly circular; exceptions occur in the carnivore Cynictis, which has a horizontally oval disk, while in wolves, jackals and foxes it is lozenge or kidney-shaped. The disk is horizontally oval in most of the Artiodactyls and in all the Equidæ, but it is found circular in the goat, llama, camel, tapir, and rhinoceros.

In the carnivora and flying squirrels the disk lies either on a level with the retina, or is sunk below it, forming a kind of cup. An appearance presenting a striking resemblance to the glaucomatous cup occurs as a normal condition in all the felidæ and in a considerable number of other carnivora; it is also met with in the flying squirrels and some of the other rodents.

The color of the disk is rosy pink or red in man and all the Simiæ; in the Galagos and Loridæ it is black or green. In the lemurs and bats, rodents, edentates, marsupials and echidna it is chalky white. The greatest diversity of color prevails in the carnivora, *i.e.*, gray, brown, and various shades of buff and white. The shape of the pupil and that of the disk seem to concord to some extent.

Some of the normal conditions observable in certain animals closely resemble those which we find in man as congenital or vestigial relics.

A persistent hyaline artery is found as a normal condition in nearly all the ruminants, and in a large number of rodents. In some of the rodents, more especially in all the agoutæ, a button-shaped vascular pigmented rudimentary pecten protrudes from the disk into the vitreous. In a number of marsupials, vascular protuberances from the disk into the vitreous occur in different forms. A fully developed nictitating membrane, active enough to sweep the whole cornea, exists only in the Ungulata and not even throughout this order. The papillary coloboma is normally met with in a large number of animals. In galagos and lorides a spreading of pigment occurs circumferentially in the retina which greatly resembles retinitis pigmentosa. In this connection the author emphasizes a fact which is of pathological interest, *i.e.*, that if these nocturnal animals be exposed for prolonged periods to daylight, the pigment advances concentrically, similar to the manner in which it progresses in man, so that the animals gradually go blind. The higher the order, the nearer the optic axes approach parallel vision. Parallel vision with the power of convergence occurs only in animals possessing a true macula, *i.e.*, man and the Simiæ.

Throughout the mammalia, with a few exceptions, vision is hypermetropic. Myopia is exceedingly rare among animals in a wild state, but it is frequently met with, both with and without astigmatism, among domesticated animals, especially guinea-pigs, rabbits and other rodents kept in confinement in small hutches. The author finds a slight degree of hypermetropia, *i.e.* under 1 D. diopter, to be the rule in the higher mammalia, while higher hypermetropia, *i.e.*, 2 D. to 5 D. was found in the wild species of the rodents, the Edentata and marsupials. Simple emmetropia was rarely met with. From an examination of the vision among a large number of native youths from the Upper and Lower Congo, the Nile Valley and the Niger territory, he found that every one with vision beyond the usual standard of $^6/_6$ or $^6/_5$ was hypermetropic to at least .50 to .75 D. (manifest), an amount closely corresponding with that found in the majority of primates and carnivores.

Astigmatism in a full degree, *i.e.*, between .50 D. and 1 D., occurs sporadically throughout the orders; the Simiæ, a number of the carnivores and rodents being practically free from it. In the domestic animals and throughout the Ungulates, the Cetacea and all the mammals below them, astigmatism occurs almost universally.

Of special interest to the ophthalmologist is the opinion advanced by the author that rays of light do not form an image on the retina as usually taught, but that the image is formed beyond the retina on the brilliant surface of the tapetum or fusca pigment layer of the choroid, and is then reflected back on to the terminals of the bacillary layer. The author believes this arrangement for vision bears a close resemblance to Lippmann's method of obtaining colored negatives. Lippmann, it will be remembered, reproduced by photography the image of the camera obscura in natural colors, the conditions for success being that a sensitive photographic film shall form a continuous homogeneous mass of sufficient thickness and the sensitive layer itself must be transparent and in contact with a reflecting surface, *i.e.*, a layer of mercury.

Monochromatic light, red, for instance, may serve to illustrate the idea. When rays of red light, which have a definite wave-length, fall on the sensitive layer, they pass through it and fall on the surface of mercury in contact with it, and the reflected rays interfere with the incident rays, forming a series of stationary waves of a length corresponding to the red, *i.e.*, places where the chemical action is null. The author constructs a theory of vision based on what he considers a resemblance of the arrangement of vision just described, to Lippmann's method of obtaining colored negatives. This ingenious theory is an elaboration of the view expressed by Helmholtz in his "Physiologische Optik," *i.e.*, that we see by incident and reflected light. Some idea may be formed of the zeal and patience and courage of the author, when it is borne in mind that the drawings are of the backgrounds of eyes of animals found in the menageries and zoological gardens of Europe, therefore, not only timid, but wild ones as well.

The text is a model of conciseness and the work as a whole fills a most conspicuous and authoritative place in a hitherto unexplored field of ophthalmology.

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